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# **John Day Basin Proposed Resource Management Plan and Final Environmental Impact Statement Volume I: Chapters 1-5**

**BLM**  
Prineville District Office



March 2012





As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

U.S. Bureau of Land Management  
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3050 NE 3rd Street  
Prineville, Oregon 97754  
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Comments, including names and street addresses of respondents, will be retained on file in the Prineville District Office as part of the public record for this planning effort. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public inspection, or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

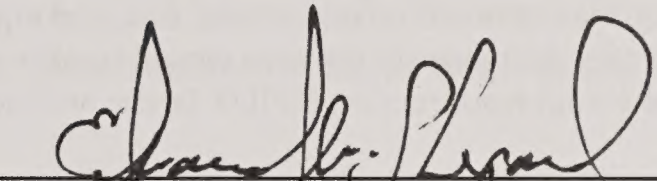
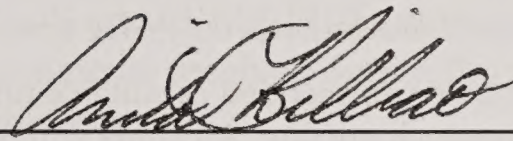
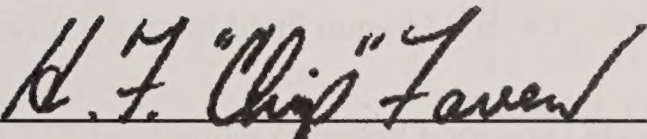


U.S. Department of the Interior  
Bureau of Land Management

# John Day Basin Proposed Resource Management Plan and Final Environmental Impact Statement

DOI-BLM-OR-P040-2008-0089-EIS

Prepared by  
Central Oregon Resource Area  
Prineville District  
March 2012

  
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Field Manager  
Central Oregon Resource Area



# John Day Basin Proposed Resource Management Plan and Final Environmental Impact Statement

DOI-BLM-OR-P040-2008-0089-EIS

1. **Responsible Agency:** United States Department of the Interior, Bureau of Land Management
2. **Cooperating Agencies/Governments:** Counties containing BLM land within the planning area, State of Oregon, Confederated Tribes of the Warm Springs Reservation of Oregon.
3. Draft ( ) **Final (X)**
4. **Administrative Action (X)** Legislative Action ( )
5. **Abstract:** The John Day Basin Proposed Resource Management Plan (PRMP) and Final Environmental Impact Statement analyzes five alternatives for managing approximately 456,000 acres of public land administered by the Bureau of Land Management (BLM) in central and eastern Oregon. The BLM-managed public lands within the planning area are located in Grant, Wheeler, Gilliam, Sherman, Wasco, Jefferson, Umatilla, and Morrow counties. Each of the Action Alternatives would revise management guidance for lands managed under the 1985 John Day Resource Management Plan (JDRMP), the eastern portion of lands managed under the 1986 Two Rivers Resource Management Plan (RMP), and the southwestern portion of lands managed under the Baker RMP. The five alternative combinations of land use allocations and allowable uses respond to the significant issues identified during scoping: Landscape health, access and travel management, and management of public lands near the North Fork John Day River (NFJDR). Much of this land was acquired as a result of the Oregon Land Exchange Act of 2000. Alternative 2 has been identified as the Preferred Alternative.

**Common to All Alternatives**—Some existing management will be continued.

**Alternative 1**—Current management (No Action/No Change)

**Common to Alternatives 2 through 5**—Some common changes to current management would be adopted under Alternatives 2-5, including management of vegetation, fire, and aquatic habitat; reduction in the area open to cross-country off road travel; increases in the area closed to off road travel or limited to designated roads and trails; management of visual resources on NFJDR lands; and designation of new, or elimination of existing ACECs.

**Alternative 2 (PRMP/Preferred Alternative)**—Under this alternative, the interim transportation system would reduce open road miles by half and the NFJDR would be recommended as suitable for Wild and Scenic River (WSR) status. Management actions would protect wilderness characteristics on 19,442 acres that have wilderness characteristics.

**Alternative 3**—The NFJDR area would be available for livestock grazing, and the most miles of road would be available for public use. The NFJDR lands would be recommended as suitable for WSR status. The alternative would provide protection of wilderness characteristics on 19,442 acres that have these values.

**Alternative 4**—The NFJDR would not be recommended as suitable for WSR status, and allotments on NFJDR lands would remain unavailable for livestock grazing. All lands with wilderness characteristics (35,457 acres) would have these values protected.

**Alternative 5**—No areas would be open to cross-country motorized vehicle use. Wilderness characteristics would be protected on 19,442 acres that have these values.

**Protest Period:** Protests will be accepted for thirty (30) calendar days following the Environmental Protection Agency's publication of its Notice of Availability in the Federal Register. See the Protest Procedures sections of this document.

**Responsible Official:** H.F. "Chip" Faver, Central Oregon Field Manager, Prineville USDI Bureau of Land Management.

**Authorizing Official:** Ed Shepard, State Director, Oregon-Washington USDI Bureau of Land Management.

**For further information contact:**

Bureau of Land Management  
Monte Kuk, JDBRMP Project Manager  
Prineville District Office  
3050 NE 3rd Street  
Prineville, Oregon 97754  
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# United States Department of the Interior

## BUREAU OF LAND MANAGEMENT

Prineville Field Office

3050 NE Third St.

Prineville, OR 97754



In reply refer to: 1610-5.G.1.4

March 2012

Dear Reader:

Enclosed is the Proposed Resource Management Plan (PRMP) and Final Environmental Impact Statement (FEIS) for the John Day Basin Resource Management Plan. The Bureau of Land Management (BLM) prepared the PRMP/FEIS in consultation with cooperating agencies, taking into account public comments received during this planning effort. The PRMP provides a framework for the future management direction and appropriate use of BLM lands within the John Day Basin, located in the following Oregon counties: Grant (156,714 acres), Wheeler (140,271 acres), Gilliam (56,748 acres), Sherman (37,930 acres), Wasco (26,402 acres), Jefferson (23,926 acres), Umatilla (11,143 acres), and Morrow (3,478 acres). The document contains both land use planning decisions and implementation decisions to guide the BLM's management of the John Day Basin.

This PRMP and FEIS have been developed in accordance with the National Environmental Policy Act of 1969, as amended, and the Federal Land Policy and Management Act of 1976, as amended. The PRMP is largely based on Alternative 2, the Preferred Alternative in the Draft Resource Management Plan/Environmental Impact Statement (DRMP/DEIS), which was released on October 30, 2008. The PRMP/FEIS contains the Proposed Plan, a summary of changes made between the DRMP/DEIS and PRMP/FEIS, impacts of the Proposed Plan, a summary of the written and verbal comments received during the public review period for the DRMP/DEIS, and responses to the comments.

Copies of the PRMP/FEIS have been sent to affected federal, state and local government agencies and Tribal governments. Copies of the PRMP/FEIS are available for public inspection at the following BLM locations:

<http://www.blm.gov/or/districts/prineville/plans/johndayrmp/index.php>

Prineville District Office – BLM

3050 NE Third Street

Prineville, OR 97754

Oregon State Office – BLM

333 SW 1st Avenue

Portland, OR 97204

Pursuant to BLM's planning regulations at 43 CFR §1610.5-2, any person who participated in the planning process for this PRMP and has an interest which is or may be adversely affected by the planning decisions may protest approval of the planning decisions within 30 days from date the Environmental Protection Agency (EPA) publishes the Notice of Availability in the *Federal Register*. For further information on filing a protest, please see the accompanying



regulations in the pages that follow (labeled as Attachment # 1). The regulations specify the required elements of your protest. Take care to document all relevant facts. As much as possible, reference or cite the planning documents or available planning records (e.g. meeting minutes or summaries, correspondence, etc.).

Examples of proposed land use plan decisions subject to protest procedures include but are not limited to the following categories:

- Rights-of-way avoidance/exclusion areas
- Land tenure zoning classifications
- Designations of Special Recreation Management Areas
- Visual Resource Management classifications
- Travel Management Designations of Open, Closed, or Limited
- Designation of Areas of Critical Environmental Concern
- Criteria for establishing future areas available for livestock grazing
- Primary transportation system classifications and road management objectives
- Wildland fire management

E-mailed and faxed protests will not be accepted as valid protests unless the protesting party also provides the original letter by either regular or overnight mail postmarked by the close of the protest period. Under these conditions, the BLM will consider the e-mailed or faxed protest as an advance copy and will afford it full consideration. If you wish to provide the BLM with such advance notification, please direct faxed protests to the attention of Brenda Hudgens-Williams - BLM protest coordinator at 202-452-5112, and e-mailed protests to: [Brenda\\_Hudgens-Williams@blm.gov](mailto:Brenda_Hudgens-Williams@blm.gov).

All protests, including the follow-up letter to e-mails or faxes, must be in writing and mailed to one of the following addresses:

**Regular Mail:**

Director (210)  
Attention: Brenda Hudgens-Williams  
P.O. Box 71383  
Washington, D.C. 20024-1383

**Overnight Mail:**

Director (210)  
Attention: Brenda Hudgens-Williams  
20 M Street SE, Room 2134LM  
Washington, D.C. 20003

Before including your address, phone number, email address, or other personal identifying information in your protest, be advised that your entire protest—including your personal identifying information—may be made publicly available at any time. While you can ask us in your protest to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

The BLM Director will make every attempt to promptly render a decision on each protest. The decision will be in writing and will be sent to the protesting party by certified mail, return receipt requested. The decision of the BLM Director shall be the final decision of the Department of the Interior. Responses to protest issues will be compiled and formalized in a Director's Protest Decision Report made available following issuance of the decisions.



Upon resolution of all land use plan protests, the BLM will issue an Approved RMP and Record of Decision (ROD). The Approved RMP and ROD will be mailed or made available electronically to all who participated in the planning process and will be available to all parties through the "Planning" page of the BLM national web site (<http://www.blm.gov/planning>), or by mail upon request.

Unlike land use planning decisions, implementation decisions included in this PRMP/FEIS are not subject to protest under the BLM planning regulations, but are subject to an administrative review process, through appeals to the Office of Hearings and Appeals (OHA), Interior Board of Land Appeals (IBLA) pursuant to 43 CFR, Part 4 Subpart E. Implementation decisions generally constitute the BLM's final approval allowing on-the-ground actions to proceed.

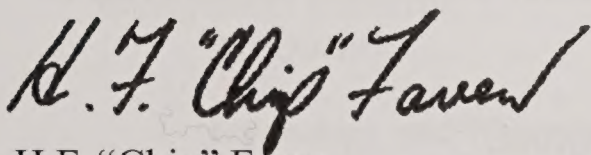
Where implementation decisions are made as part of the land use planning process, they are still subject to the appeals process or other administrative review as prescribed by specific resource program regulations once the BLM resolves the protests to land use planning decisions and issues an Approved RMP and ROD. The Approved RMP and ROD will therefore identify the implementation decisions made in the plan that may be appealed to the Office of Hearing and Appeals.

Implementation level decisions include:

- Interim Travel Management decisions, seasonal area and route closures, interim wilderness management decisions, decision to utilize the direction in the PRMP as the river plan for current and future wild and scenic river designations, Little Canyon Mountain - noise restrictions, road closure in Sutton Mountain Wilderness Study Area, hours of allowable OHV use, and class of OHV.

We appreciate your help in this planning effort and look forward to your continued interest and participation as the plan is finalized and subsequently implemented. For additional information or clarification regarding this document or the planning protest process, please contact John Day Basin RMP Team Lead Monte Kuk at (541) 416-6700 or by e-mail at: [John\\_Day\\_Basin\\_RMP@blm.gov](mailto:John_Day_Basin_RMP@blm.gov).

Sincerely,

A handwritten signature in black ink that reads "H.F. 'Chip' Faver". The signature is written in a cursive, slightly slanted style.

H.F. "Chip" Faver

Field Manager, Central Oregon Resource Area



## Protest Regulations

[CITE: 43CFR1610.5-2]

TITLE 43—PUBLIC LANDS: INTERIOR  
CHAPTER II—BUREAU OF LAND MANAGEMENT, DEPARTMENT OF THE INTERIOR  
PART 1600—PLANNING, PROGRAMMING, BUDGETING—Table of Contents  
Subpart 1610—Resource Management Planning  
Sec. 1610.5-2 Protest procedures.

- (a) Any person who participated in the planning process and has an interest which is or may be adversely affected by the approval or amendment of a resource management plan may protest such approval or amendment. A protest may raise only those issues which were submitted for the record during the planning process.
  - (1) The protest shall be in writing and shall be filed with the Director. The protest shall be filed within 30 days of the date the Environmental Protection Agency published the notice of receipt of the final environmental impact statement containing the plan or amendment in the Federal Register. For an amendment not requiring the preparation of an environmental impact statement, the protest shall be filed within 30 days of the publication of the notice of its effective date.
  - (2) The protest shall contain:
    - (i) The name, mailing address, telephone number and interest of the person filing the protest;
    - (ii) A statement of the issue or issues being protested;
    - (iii) A statement of the part or parts of the plan or amendment being protested;
    - (iv) A copy of all documents addressing the issue or issues that were submitted during the planning process by the protesting party or an indication of the date the issue or issues were discussed for the record; and
    - (v) A concise statement explaining why the State Director's decision is believed to be wrong.
  - (3) The Director shall promptly render a decision on the protest.
- (b) The decision shall be in writing and shall set forth the reasons for the decision. The decision shall be sent to the protesting party by certified mail, return receipt requested. The decision of the Director shall be the final decision of the Department of the Interior.



# Table of Contents

## Volume I

<b>Executive Summary</b> .....	<b>xvii</b>
Introduction .....	xix
Biophysical Context and Planning Boundaries .....	xix
Public Scoping and Comments .....	xix
Issues .....	xx
Management Concerns .....	xx
Summary of Changes in the Alternatives between Draft RMP/EIS and PRMP/FEIS .....	xx
Management Alternatives .....	xxi
Key Features of the Alternatives .....	xxii
Environmental and Social Consequences .....	xxvi
Acronyms and Abbreviations .....	xxviii
<b>Chapter 1 Introduction</b> .....	<b>1</b>
Overview .....	3
Vision .....	3
BLM Mission and Philosophy .....	4
Planning Criteria and Legislative Constraints .....	4
The Planning Process .....	6
Planning Criteria .....	7
Relationship to BLM Policies, Plans, and Programs .....	8
Related Plans .....	8
Federal Plans .....	8
Tribal Government Plans and Treaties .....	8
State and County Plans .....	9
Collaboration .....	9
Policy .....	9
Purpose and Need for a Revised Plan .....	9
Planning Area .....	10
Physical Boundaries .....	10
Social and Economic Setting .....	10
Issues Identified During Scoping .....	11
Scoping Process .....	11
Issues Addressed .....	12
Issue 1: Landscape Health .....	12
Issue 2: Access and Travel Management .....	13
Issue 3: North Fork of the John Day River .....	13
Management Concerns .....	15
Air Quality .....	15
Soil .....	15
Hydrology and Water Resources .....	15
Noxious Weeds .....	15
Wild Horses .....	16
Cultural Resources .....	16
Paleontology .....	16
Wilderness Characteristics .....	16
Visual Resources .....	16
Special Designations .....	16
Cave Resources .....	17
Livestock Grazing .....	17
Lands and Realty .....	17
Minerals and Energy .....	17



Issues Considered but not Analyzed Further .....	17
Management of the Newly Acquired Lands in the North Fork John Day River as Wilderness Study Areas.....	17
Data Standards .....	18
How This Document is Organized .....	18
<b>Chapter 2 Alternatives .....</b>	<b>19</b>
How This Chapter Is Organized .....	21
Summary of Major Changes Between the Draft and Final EIS/RMP .....	22
Management Common to All Alternatives .....	22
Management Common to All Action Alternatives .....	23
Alternative 1 (No Action) .....	24
Alternative 2 .....	24
Alternative 3 .....	25
Alternative 4 .....	25
Alternative 5 .....	26
Planning for BLM Land Management in the John Day Basin.....	26
Comparison of Alternatives .....	27
Description of Alternatives.....	37
Proposed Resource Management Plan (PRMP) (Alternative 2) .....	37
Soils.....	37
Air Quality.....	41
Vegetation .....	41
Fuels .....	49
Fire .....	54
Aquatics.....	55
Wildlife .....	71
Wild Horses.....	79
Lands with Wilderness Characteristics .....	79
Cave Resources.....	83
Visual Resources.....	84
Special Designations .....	88
Native American Uses .....	102
Paleontological Resources .....	102
Cultural Resources .....	103
Livestock Grazing .....	104
Recreation Opportunities .....	109
Public Health and Safety.....	120
Access and Travel Management.....	121
Energy and Mineral Resources.....	164
Lands and Realty .....	179
Management of Newly Acquired Lands.....	190
Agricultural Land Management.....	191
Hazardous Materials Management .....	193
Alternative 1 – No Action .....	193
Soils .....	193
Air Quality.....	193
Vegetation .....	193
Fuels .....	194
Fire .....	194
Aquatics.....	194
Wildlife.....	195
Wild Horses .....	195
Lands with Wilderness Characteristics .....	195
Cave Resources .....	195
Visual Resources.....	195
Special Designations .....	196
Native American Uses .....	196



Paleontological Resources .....	196
Cultural Resources .....	196
Livestock Grazing .....	197
Recreation Opportunities .....	197
Travel Management .....	198
Energy and Mineral Resources .....	198
Lands and Realty .....	198
Management of Newly Acquired Lands .....	199
Agricultural Land Management .....	199
Hazardous Materials Management .....	199
Alternatives 3, 4, and 5 .....	200
Management Common to Alternatives 3, 4, and 5 .....	200
Alternative 3 .....	203
Special Designations .....	203
Livestock Grazing .....	204
Recreation Opportunities .....	204
Travel Management .....	205
Alternative 4 .....	206
Lands with Wilderness Characteristics .....	206
Special Designations .....	206
Livestock Grazing .....	206
Recreation Opportunities .....	207
Travel Management .....	207
Energy and Mineral Resources .....	208
Alternative 5 .....	208
Livestock Grazing .....	208
Recreation Opportunities .....	208
Travel Management .....	209
Summary of Alternative Outcomes .....	210
Alternatives Considered But Not Further Analyzed .....	215
North Fork .....	215
Travel Management .....	215
Agricultural Lands .....	215
Energy Corridors .....	215
Aquatics .....	216
Lands with Wilderness Characteristics .....	216
OHV Designations .....	216
Lands .....	217
Livestock Grazing .....	217
Minerals .....	218
Summary of Effects .....	219
<b>Chapter 3 Affected Environment .....</b>	<b>231</b>
Summary of Changes between the Draft and Final EIS/RMP .....	232
A Personal View .....	233
Introduction .....	235
Ecoregions .....	235
Columbia Plateau Ecoregion .....	236
Blue Mountains Ecoregion .....	238
Soils .....	244
Air Quality .....	247
Climate Change .....	248
Vegetation .....	248
Riparian Vegetation .....	248
Terrestrial Vegetation .....	252
Fire and Fuels .....	262
Aquatic Resources .....	268
Stream Channels and Floodplains .....	268



Water Quality .....	271
Water Quantity .....	277
Fisheries .....	277
Wildlife .....	281
Wild Horses .....	290
Wilderness Characteristics .....	291
Cave Resources .....	292
Visual Resources .....	293
Special Designations .....	295
Areas of Critical Environmental Concern .....	295
Wilderness .....	295
Wild and Scenic Rivers .....	296
Special Road Designation .....	297
Research Natural Areas .....	298
Other Areas Designated for Special Management .....	298
Paleontology Resources .....	298
Cultural Resources .....	299
People in the John Day Basin .....	302
Resource Uses .....	325
Native American Uses .....	325
Livestock Grazing .....	325
Forest Products .....	327
Recreation .....	329
Access and Travel Management .....	336
Energy and Mineral Resources .....	341
Lands and Realty .....	354
Carbon Storage and Greenhouse Gas Emissions .....	358
<b>Chapter 4 Environmental Consequences .....</b>	<b>361</b>
Introduction .....	363
Summary of Environmental Consequences .....	367
Analyses of Environmental Consequences by Resource or Resource Use .....	370
Soils .....	370
Carbon Storage and Greenhouse Gas (GHG) Emission .....	380
Air Quality .....	384
Vegetation .....	387
Fire and Fuels .....	405
Aquatic Resources .....	410
Wildlife .....	427
Wild Horses .....	458
Lands with Wilderness Characteristics .....	459
Cave Resources .....	463
Visual Resources .....	463
Special Designations .....	468
Native American Uses .....	475
Paleontological Resources .....	475
Cultural Resources .....	477
Livestock Grazing .....	479
Recreation Opportunities .....	483
Access and Travel Management .....	511
Energy and Mineral Resources .....	518
Lands and Realty .....	521
Communities and Economies .....	523
<b>Chapter 5 Consultation and Coordination .....</b>	<b>541</b>
Introduction .....	543
Cooperating Agencies .....	543
Tribal Involvement .....	544



Local Government .....	545
State Government .....	545
Federal Government .....	545
Resource Advisory Council .....	545
Public Involvement .....	547
Future Public Involvement Opportunities .....	547
Information Sharing .....	548
List of Preparers .....	549
BLM Interdisciplinary Team .....	549
Other Preparers/Reviewers .....	550
<b>Glossary .....</b>	<b>553</b>
<b>References.....</b>	<b>575</b>
<b>Index .....</b>	<b>591</b>

## Volume II

Appendix A: Planning and Implementation Authorities.....	A-1
Appendix B: Best Management Practices.....	B-1
Appendix C: Oregon State Scenic Waterway.....	C-1
Appendix D: Special Status Plants Documented or Suspected on BLM Lands in the John Day Basin Planning Area.....	D-1
Appendix E: Biophysical Setting Summary.....	E-1
Appendix F: Comparison of Current Vegetation Conditions to the Acceptable Range of Variability .....	F-1
Appendix G: Desired Conditions for Stream Channel Restoration and Instream Flow Reservations .....	G-1
Appendix H: Special Status Wildlife.....	H-1
Appendix I-1: Wild and Scenic River Eligibility Inventory .....	I-1-1
Appendix I-2: Documentation of Wild and Scenic River Eligibility Inventory for the North Fork John Day River .....	I-2-1
Appendix I-3: Wild and Scenic River Draft Suitability Study for North Fork John Day River .....	I-3-1
Appendix J: Grazing .....	J-1
Appendix K: Special Recreation Management Areas.....	K-1
Appendix L: Existing Rights-of-Way.....	L-1
Appendix M: Withdrawals—Existing and Proposed.....	M-1
Appendix N: Monitoring .....	N-1
Appendix O: Priority Species Assessment.....	O-1
Appendix P: Common and Scientific Names.....	P-1
Appendix Q: Wildlife and Vegetation Species Associated with Riparian Areas .....	O-1
Appendix R: Social and Economic Analysis Methodology .....	R-1
Appendix S: Snags and Salvage.....	S-1
Appendix T: Responses to Public Comments and Comment Letters from Congressional Representatives; Indian Tribes; and Federal, State, and Local Government Agencies .....	T-1
Appendix U: Interim Wilderness Management Plan—Spring Basin Wilderness Area.....	U-1
Appendix V: Rules of Conduct for Designated and Suitable River Corridors .....	V-1
Appendix W: Management Direction for Greater Sage-Grouse.....	W-1



# List of Tables

Table ES-1. Synthesis of environmental consequences (including social, economic, and ecological) of management alternatives on resources and resource uses in the John Day River Basin plan area. ....	xxvi
Table 1-1. BLM Planning Process. ....	6
Table 2-1. Comparison of Alternatives .....	28
Table 2-2. Down Wood Densities for Managed Stands (total tons/acre includes large pieces) .....	45
Table 2-3. Measures of Attainment of ACS Objectives.....	58
Table 2-4. Management of Riparian Management Areas (RMAs) by Function Rating .....	69
Table 2-5. General Guidelines <sup>1</sup> for Seasonal Restriction and Distance Buffers.....	75
Table 2-6. Minimum Snag <sup>1</sup> Densities for Managed Stands .....	78
Table 2-7. Acres Identified for Protection of Wilderness Characteristics, by Alternative.....	82
Table 2-8. Visual Resource Management (VRM) Classification (acres), by Alternative.....	85
Table 2-9. Areas of Critical Environmental Concern by Alternative.....	97
Table 2-10. Benefits-Based Recreation Setting Criteria. ....	112
Table 2-11. Recreation Management by Alternative .....	116
Table 2-12. Off-Highway Vehicle Designations by Alternative and Special Recreation and Extensive Recreation Management Areas. ....	118
Table 2-13. Interim and Prescribed Route Density Standards for Alternative 2. ....	123
Table 2-14. Areas Subject to Restrictions of Minerals, Rights-of-Way, Renewable Energy, Communication Sites, and Facilities.....	170
Table 2-15. Lands Suitable for Acquisition (carried forward from John Day River Plan).....	180
Table 2-16. Land Tenure Zones by Alternative (acres).....	183
Table 2-17. Distribution of Management Direction for Agricultural Lands for All of the Action Alternatives. ...	191
Table 2-18. Distribution of Existing Management Direction for Agricultural Lands. ....	199
Table 2-19. Grazing Decision Matrix, given voluntary lease relinquishment. ....	200
Table 2-20. Factors and Weights used in the Grazing Decision Matrix. ....	201
Table 2-21. Interim and Prescribed Route Density Standards for Alternative 3. ....	205
Table 2-22. Interim and Prescribed Route Density Standards for Alternative 4. ....	207
Table 2-23. Summary of Alternative Outcomes. (See glossary for definitions.) .....	210
Table 2-24. Summary of Key Effects by Resource in the John Day River Basin Plan Area. ....	219
Table 3-1. Ecoregion Acres.....	235
Table 3-2. Accreted Terranes in the Planning Area with Rock Types and Age. ....	239
Table 3-3. Sensitive Soils by Soil Associations and Subecoregion. ....	245
Table 3-4. BLM Land Zoned as Agricultural.....	247
Table 3-5. Special Status Plant Species.....	260
Table 3-6. Distribution of Fire Regime Types and Fire Regime Condition Class by Biophysical Setting for the John Day Basin Planning Area.....	263
Table 3-7. Fuels Treatments. ....	267
Table 3-8. Stream Channel Conditions, 1980s - 2000s. ....	270
Table 3-9. Oregon Water Quality Index Status and Trends Summary, 1994 - 2004. ....	272
Table 3-10. 303(d) Listed Streams. ....	273



Table 3-11. Factors that Influence Stream Surface Shade. ....	276
Table 3-12. Average Annual Goals for Spring Chinook Salmon and Summer Steelhead.....	279
Table 3-13. Bighorn Sheep Releases and Current Population Estimates in the John Day Basin. ....	288
Table 3-14. Population Change in Counties and Towns within the Planning Area. ....	306
Table 3-15. Number and Percent of Persons of Hispanic Origin. ....	307
Table 3-16. Change in Income by County. ....	308
Table 3-17. Prineville District Office Expenditures. ....	310
Table 3-18. Salary Expenditures for BLM Personnel Within the Basin. ....	311
Table 3-19. Annual AUM Authorizations in the Planning Area.....	313
Table 3-20. Number of Farms and Acres of Crops in the Counties of the JDBRMP Planning Area.....	313
Table 3-21. Recreation Trip Expenditures. ....	316
Table 3-22. Community Well-being. ....	318
Table 3-23. Levels of Community Resilience for Columbia Basin Study Communities, With Levels of Scores on Scales Comprising the Community Resilience Index (2000).....	319
Table 3-24. Racial and Ethnic Composition of Planning Area Counties (2008). ....	324
Table 3-25. Summary of U.S. and State Highway Mileage Within the Planning Area.....	337
Table 3-26. County Transportation System in the John Day Basin RMP Area.....	338
Table 3-27. Mineral Material Sites in the Planning Area.....	347
Table 3-28. Carbon Storage (expressed in metric tons of carbon dioxide equivalents [CO <sub>2</sub> e] in live trees, dead trees, understory vegetation, and litter in the planning area).....	359
Table 4-1. Synthesis of Environmental Consequences (Including Social, Economic, and Ecological) of Management Alternatives on Resources and Resource Uses in the John Day River Basin Plan Area. ....	368
Table 4-2. WEPP Sediment Yield by Alternative. ....	375
Table 4-3. Comparison of Alternatives Effects on Soils.....	380
Table 4-4. Annual Contribution to Greenhouse Gas Emissions (in tons of CO <sub>2</sub> or equivalent) of Planned Actions on BLM-managed Public Lands. ....	382
Table 4-5. Annual and 30-year vegetation treatment assumptions by alternative. ....	388
Table 4-6. Acres of Open and Closed Allotments in the plan area if all grazing leases were relinquished.....	394
Table 4-7. Summary of Differences in Management Direction Between Alternatives That Could Affect Vegetation Community Characteristics. ....	397
Table 4-8. Suppression Strategies by Zone. ....	406
Table 4-9. Relative Fire Hazard on BLM Lands and across All Ownerships in the Plan Area Among Alternatives. ....	407
Table 4-10. Size of VRM Class Zones by Alternative (acres).....	409
Table 4-11. Comparison of Water Right Uses Between Alternatives.....	417
Table 4-12. Acres of OHV Designations within Riparian Management Areas by Alternative. ....	421
Table 4-13. Acres of BLM Lands by Potential Grazing Availability Category. ....	436
Table 4-14 Average Allowable Road Density, Interim Road Density by Alternative, and Approximate Priority Community Composition. ....	439
Table 4-15. Acres of Key Wildlife Habitat by Prescribed Road Density Class on BLM Lands. ....	440
Table 4-16. Percentage of Priority Communities by Allowable Road Density Allocation on BLM Lands.....	441
Table 4-17. Acres of Key Habitats by Interim Road Density Category and Alternative on BLM Lands. ....	442
Table 4-18. Acres of Key Wildlife Habitats on BLM lands by Land Tenure and Alternative. ....	454



Table 4-19. Land Use Allocations that Protect Elements of Wilderness Characteristics.....	461
Table 4-20. Comparison of Management Effects on Outstandingly Remarkable Values (ORVs) of Wild and Scenic Rivers (WSR) by Alternative (BLM public lands in WSR segment only). ....	468
Table 4-21. Grazing Alternatives Results (AUMs). ....	481
Table 4-22. Comparison of Effects of Popular Ground-based Recreation Activities.* ....	485
Table 4-23a. Estimated Attenuation of Sound from Five OHVs Operated Simultaneously Under Load Based on 6 Decibels Attenuation With Each Doubling of Distance. ....	495
Table 4-23b. Number of Private Residences Within a 1-mile Proximity of the North and South Pit Areas at Little Canyon Mountain. ....	496
Table 4-23c. Field Measurements of Sound Levels (Decibels) With a Combination of Seven OHVs in Concurrent Use at the North Pit or South Pit. ....	496
Table 4-24. Number of Days Sound From Off-Highway Vehicle Use Could be Heard on Public Land From Little Canyon Mountain Area. ....	497
Table 4-25. Comparison of the Effects of Management Alternatives on Motorized and Non-motorized Recreation Opportunities and Development on BLM Lands in the Planning Area. ....	506
Table 4-26. Summary of Effects of Management Alternatives on Motorized and Non-motorized Opportunities and Development in Little Canyon Mountain SRMA. ....	507
Table 4-27. Summary of Recreation Management Effects on Public Lands Recreation in the Plan Area by Alternative. ....	508
Table 4-28. Road Density Values by Alternative for Six Subareas Within the Plan Area, Along With the Average Prescribed Road Density Limits (mi/mi <sup>2</sup> ).....	512
Table 4-29. Existing Visual Resource Management (VRM) Classes and Road Miles Within VRM Class. ....	515
Table 4-30. Visual Resource Management (VRM) Classes and BLM Road Miles Within VRM Classes for the Action Alternatives. ....	515
Table 4-31. Estimated Outputs by Alternative. ....	525
Table 4-32. Average Annual Employment by Program by Alternative (Full and Part-time Jobs).....	525
Table 4-33. Average Annual Labor Income by Program by Alternative (thousands of dollars). ....	526
Table 4-34. Current Use and Permitted Animal Unit Months per Alternative.....	528
Table 4-35. Average Annual Employment Associated with Grazing by Alternative (Full and Part-time Jobs). ...	529
Table 4-36. Average Annual Labor Income Associated with Grazing by Alternative (Thousands of 2008 Dollars).....	529
Table 5-1. Potential and Actual Cooperators.....	543
Table 5-2. John Day/Snake Resource Advisory Council (RAC) Member List. ....	546



# List of Figures

Figure 2-1. Desired Distribution of Stream Conditions for the John Day River Basin over the Life of the John Day River Basin RMP. ....	59
Figure 2-2. Linear Feature Decision Tree for Aquatics. ....	64
Figure 3-1. Underlying Geology .....	239
Figure 3-2. Clarno Formation. ....	239
Figure 3-3. John Day Formation. ....	240
Figure 3-4. Picture Gorge Basalts on top of Clarno Formation .....	241
Figure 3-5. Coyote willow on Bridge Creek. ....	249
Figure 3-6. <i>Typha latifolia</i> (Broadleaf cattail). ....	249
Figure 3-7. The American speedwell. ....	250
Figure 3-8. Layering of creeping spike rush, 3-square full rush up to cocklebur on the main stem John Day River. ....	250
Figure 3-9. Reed canarygrass. ....	250
Figure 3-10. Naked sedge near Burnt Ranch on the John Day River. ....	250
Figure 3-11. White alder in Pine Hollow. ....	251
Figure 3-12. Mountain alder/redosier dogwood association on Deer Creek. ....	251
Figure 3-13. Vegetation Composition. ....	253
Figure 3-14. Percent of Area by Fire Regime. ....	262
Figure 3-15. Fire Regime Condition Class on BLM Lands Across the John Day Basin Planning Area. ....	264
Figure 3-16. Central Oregon Fire Management Plan - Fire Management Units. ....	265
Figure 3-17. Miles of Stream by Land Manager. ....	268
Figure 3-18. Stream Channel and Floodplain Configuration. ....	269
Figure 3-19. River Channel Evolution. ....	269
Figure 3-20. Condition of Inventoried Stream Channels. ....	270
Figure 3-21. Evaluation of Riparian Processes on BLM Streams. ....	271
Figure 3-22. Factors that Affect Stream Temperature Dynamics. ....	272
Figure 3-23. John Day River Surface Temperature. ....	276
Figure 3-24. John Day River Basin Stream Flow Restoration Priorities. ....	278
Figure 3-25. Road Density on BLM lands within the Planning Area. ....	283
Figure 3-26. Employment History of Grant, Wheeler, and Gilliam Counties. ....	307
Figure 3-27. Unemployment Rate of John Day Basin Counties. ....	309
Figure 3-28. Percent of Population below Poverty Level. ....	309
Figure 3-29. Payments in Lieu of Taxes. ....	311
Figure 3-30. BLM Timber Harvest in Grant and Wheeler Counties. ....	314
Figure 3-31. BLM Share of Total County Harvest in Eight County Area. ....	315
Figure 3-32. Percent of County Population below Poverty Level. ....	324
Figure 3-33. Timber Harvesting in Oregon by Ownership. ....	329
Figure 3-34. Miles of Road on BLM Land by Surface Type. ....	338
Figure 3-35. Land Ownership in the JDBRMP Area. ....	355
Figure 3-36. Water Availability in the John Day Basin 4 out of 5 Years. ....	357



Figure 3-37. Ownership of Lands supplied Water from BLM Owned Points of Diversion.....	357
Figure 4-1. FlamMap fire hazard for the John Day Basin plan area. ....	408
Figure 4-2. Components of increases in peak flows as a result of vegetation and fire treatments for 2-year and 100-year floods between alternatives. ....	413
Figure 4-3. Change in stream channel condition for streams inventoried in 1980 and 2000 and projected to 2020 for the action alternatives only. ....	415
Figure 4-4. Riparian widths compared to results of 57 studies on minimum widths (distance) required to meet resource requirements of channel complexity; nutrient/sediment/temperature buffering; general ecosystem function; and anadromous fish, mammal, bird, reptile, amphibian, and bird habitat (feet from stream channel). ....	420
Figure 4-5. Sediment delivery from road crossings to stream channels by alternative. (Wepp Model).....	420
Figure 4-6. Percent of plan area sediment delivery to stream channels at road crossings by jurisdiction. ....	424
Figure 4-7. Percentage of key wildlife habitats by prescribed road density class on BLM lands. ....	440
Figure 4-8. Percentage of key habitats by interim road density calculated on BLM lands. ....	441
Figure 4-9. Approximate average road density by alternative within Priority Communities BLM only. ....	443
Figure 4-10. Percentage of key habitats by road density category calculated on BLM lands only versus cumulatively (all roads within 1 mile of BLM). ....	444
Figure 4-11. Percentage of key wildlife habitats on BLM lands by road band (yards).....	445
Figure 4-12. Percentage of key wildlife habitats on BLM lands by road band (yards) and alternative.....	446
Figure 4-13. Acres of security and reduced security habitat on BLM lands within seasonal closures by alternative. ....	447
Figure 4-14. Percentages of BLM lands designated as Open, Limited, and Closed to OHV use by alternative....	448
Figure 4-15. Alternative 1—Percentage of key wildlife habitats on BLM lands by OHV designation.....	449
Figure 4-16. Alternatives 2, 3, 4, and 5 – Percentage of key wildlife habitats on BLM lands by OHV designation .....	450
Figure 4-17. Percentage of key wildlife habitats on BLM land by land tenure and alternative. ....	453

## List of Maps

Map 1: John Day Basin Resource Management Plan .....	xviii
Map 2: North Fork John Day Acquired Lands Oregon Land Exchange Act 2000 .....	14
Map 3: Sensitive Soils .....	38-39
Map 4: Potential Vegetation: Biophysical Setting (BpSs) and Priority Vegetation Treatment Needs.....	46-47
Map 5: Fire Response Zones and Fire Regime Condition Class .....	52-53
Map 6: Priority Watershed Assessments and Conservation Opportunity Areas .....	60-61
Map 7: Wilderness Characteristics .....	80-81
Map 8: Visual Resource Management.....	86-87
Map 9: Special Management Areas .....	90-91
Map 9a: Spring Basin Wilderness .....	94-95
Map 10: Grazing Allotments .....	106-107
Map 11: Special Recreation Management Areas, Extensive Recreation Management Areas, and Recreation Management Zones .....	114-115
Map 12: Transportation Management Areas .....	126-127
Map 12A: Alternative 1 Travel Management and Off Highway Vehicle Designations—Lower John Day ...	128-129



Map 12B: Alternative 1 Travel Management and Off Highway Vehicle Designations—Sutton Mountain . . .	130-131
Map 12C: Alternative 1 Travel Management and Off Highway Vehicle Designations—Rudio Mountain . . .	132-133
Map 12D: Alternative 1 Travel Management and Off Highway Vehicle Designations— South Fork John Day . . . . .	134-135
Map 12E: Alternative 1 Travel Management and Off Highway Vehicle Designations— Upper John Day . . . . .	136-137
Map 12F: Alternative 1 Travel Management and Off Highway Vehicle Designations— North Fork John Day . . . . .	138-139
Map 13A: Alternative 2, 4, and 5 Travel Management and Off Highway Vehicle Designations— Lower John Day . . . . .	140-141
Map 13B: Alternative 2, 4, and 5 Travel Management and Off Highway Vehicle Designations— Sutton Mountain . . . . .	142-143
Map 13C: Alternative 2, 4, and 5 Travel Management and Off Highway Vehicle Designations— Rudio Mountain . . . . .	144-145
Map 13D: Alternative 2, 4, and 5 Travel Management and Off Highway Vehicle Designations— South Fork John Day . . . . .	146-147
Map 13E: Alternative 2, 4, and 5 Travel Management and Off Highway Vehicle Designations— Upper John Day . . . . .	148-149
Map 13F: Alternative 2, 4, and 5 Travel Management and Off Highway Vehicle Designations— North Fork John Day . . . . .	150-151
Map 14A: Alternative 3 Travel Management and Off Highway Vehicle Designations—Lower John Day . . .	152-153
Map 14B: Alternative 3 Travel Management and Off Highway Vehicle Designations—Sutton Mountain . . .	154-155
Map 14C: Alternative 3 Travel Management and Off Highway Vehicle Designations—Rudio Mountain . . .	156-157
Map 14D: Alternative 3 Travel Management and Off Highway Vehicle Designations— South Fork John Day . . . . .	158-159
Map 14E: Alternative 3 Travel Management and Off Highway Vehicle Designations—Upper John Day . . .	160-161
Map 14F: Alternative 3 Travel Management and Off Highway Vehicle Designations— North Fork John Day . . . . .	162-163
Map 15: Alternative 1 Land Tenure . . . . .	186-187
Map 16: Alternatives 2, 3, 4, and 5 Land Tenure . . . . .	188-189
Map 17: Environmental Protection Agency Ecoregions . . . . .	234
Map 18: Key Vegetation Elements . . . . .	256-257
Map 19: 303(d) Listed Streams . . . . .	274-275
Map 20: Wildlife Habitats . . . . .	284-285
Map 21: Locatable Mineral Potential . . . . .	344-345
Map 22: Salable Mineral Potential . . . . .	348-349
Map 23: Oil and Gas Potential . . . . .	350-351
Map 24: Geothermal Development Potential . . . . .	352-353
Map 25: Transportation Erosion Estimates . . . . .	376-377



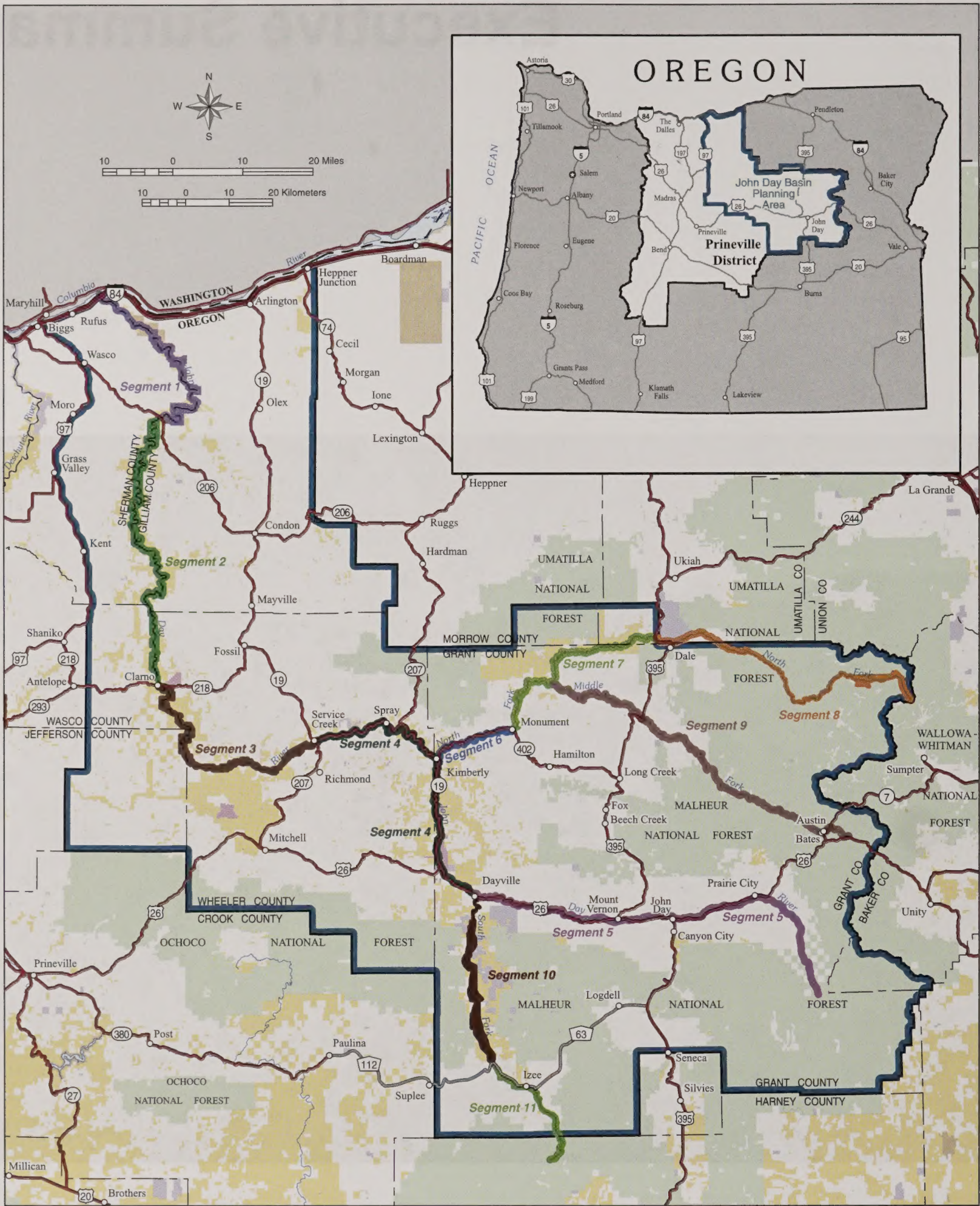
## List of Maps



# Executive Summary







LEGEND

- Planning Area Boundary
- Interstate Highway
- U.S. Highway
- State Highway
- County Route

- Administered Land
- Bureau of Land Management
  - Forest Service
  - John Day Fossil Beds National Monument
  - Other Federal
  - State
  - Private or Other

- River Segment
- 1
  - 2
  - 3
  - 4
  - 5
  - 6
  - 7
  - 8
  - 9
  - 10
  - 11

U.S. DEPARTMENT OF THE INTERIOR  
Bureau of Land Management



PRINEVILLE DISTRICT

John Day Basin  
Proposed Resource Management Plan  
Final Environmental Impact Statement  
2012

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Map 1: John Day Basin Resource Management Plan



# Introduction

The John Day Basin Proposed Resource Management Plan and Final Environmental Impact Statement (PRMP/FEIS) is presented in two volumes.

- Volume 1 – Signature Page, Abstract, Dear Reader Letter, Table of Contents, Executive Summary, List of Acronyms and Abbreviations, Chapters 1-5 of the PRMP/FEIS, Glossary, and References
- Volume 2 – Appendices

Chapter 1 of the PRMP/FEIS includes a description of the Purpose and Need for action and the issues that drove the development of the alternatives. This chapter also summarizes the process for developing these alternatives and how input from the public, tribes, other governments and agencies, and other stakeholders were involved in the process.

Chapter 2 describes the range of alternatives considered in detail and identifies the BLM preferred alternative.

Chapter 3 describes the affected environment.

Chapter 4 analyzes and compares the environmental consequences of each of the alternatives.

Chapter 5 describes the planning process and collaboration involved in the creation of this document.

## Biophysical Context and Planning Boundaries

The RMP planning area encompasses 5,450,225 acres mostly within the John Day River basin of central and eastern Oregon (Map 1). Within the planning area, the BLM manages about 456,000 acres of public land surface. The BLM managed lands fall in eight Oregon counties—Grant, Wheeler, Gilliam, Wasco, Sherman, Umatilla, Jefferson, and Morrow. Of the surface area, 441,987 acres are in the Central Oregon Resource Area of the Prineville District BLM, and 14,622 acres are in the Baker Resource Area of the Vale District BLM. This RMP would provide direction for BLM lands within the planning area that are within the boundaries of both the Prineville and Baker Resource Areas. Private and county lands and lands administered by state or other federal governments are not subject to decisions made in this RMP.

About 77% of BLM lands within the John Day Basin planning area fall within the Blue Mountains Ecoregion, while about 23% are within the Columbia Plateau Ecoregion. Vegetation within the planning area is dominated by sagebrush shrubland, juniper woodland, dry and mesic mixed conifer forest, grassland, and riparian communities (Map 4). The primary disturbance element has been wildfire, with occasional episodes of insect/disease epidemics and wind and moisture driven erosion.

## Public Scoping and Comments

While formal public scoping began with publication of the Notice of Intent in the Federal Register in February 2006, the BLM planning team actively pursued public input on planning issues and concerns both before and after that date in a variety of ways. A full scoping report was published in the Analysis of the Management Situation (AMS). Chapter 5 also provides more information.

The publication of the Draft RMP/FEIS initiated a 90-day comment period. The comment period occurred between October 31, 2008 and January 29, 2009. The BLM received 1,385 responses in the form of letters, e-mails, faxes, telephone conversation transcripts, and organized letter campaigns. The comments and response



to comments are reported in Appendix T. Where appropriate the comments were employed to modify the alternatives. Some changes are represented in the Preferred Alternative (Alternative 2 – PRMP) while others were included in the other action alternatives. Those substantive comments not represented in any alternative were responded to in Appendix T or through personal response letters.

## **Issues**

As a result of public scoping and analysis of the adequacy of existing management to address new information and changed circumstances, three key planning issues were identified for the John Day Basin planning area: Landscape Health, Access and Travel Management, and Newly Acquired Lands in the North Fork John Day River area.

### **Issue 1: Landscape Health**

How should public land be managed to achieve healthy plant and animal communities? Where is it appropriate to allow Wildland Fire Use fires to burn?

### **Issue 2: Access and Travel Management**

How should the BLM design a road system to efficiently deliver goods, people, and services across the planning area? What opportunities will BLM provide for motorized recreation, while protecting natural and cultural resources?

### **Issue 3: North Fork John Day River**

How can the BLM manage newly acquired North Fork John Day River lands to protect native fish, wildlife habitat, and public recreation, as legislated in the Oregon Land Exchange Act of 2000?

## **Management Concerns**

In addition to the three key planning issues described above, other management concerns include: (a) topics raised during scoping that require attention, but which have a lower level of controversy over management than the key issues identified above, or (b) topics requiring guidance by BLM's Land Use Planning Handbook (USDI-BLM 2005). Management concerns are addressed in the PRMP/FEIS, although the management related to them generally does not vary by alternative (except in select situations). Alternatives to address management concerns are described in more detail below.

## **Summary of Changes in the Alternatives between Draft RMP/EIS and PRMP/FEIS**

Chapter 1 has been modified to reflect the current status of the John Day Basin planning effort.

Chapter 2 has been modified to reflect input from BLM staff, other federal agencies, tribes, other governments, the public, and other stakeholders. These changes are described in detail below and in Chapter 2. Proposed Actions and Guidelines are now organized by alternative to provide the reader a comprehensive overview of the alternatives. Management direction from the John Day River Plan that was incorporated by reference in the Draft has been added to the Final.

Chapter 3 has been modified to reflect input from BLM staff, other federal agencies, tribes, other governments, the public, and other stakeholders. Additional information has been provided regarding wilderness characteristics inventory process and findings, climate, carbon storage, and greenhouse gas.



Chapter 4 has been modified to reflect environmental consequences of the alternatives, as modified.

Chapter 5 has been updated to reflect additional public and cooperator coordination efforts.

Appendices have been modified with new information and new appendices added. Most significantly, Appendix T displays substantive comment summaries and responses developed based on comments received on the Draft RMP/EIS.

Finally, several terms used in the Draft RMP/EIS have been replaced by different terms in the PRMP/FEIS. The use of two terms, grazing permit and grazing permittee, have been eliminated from the PRMP/FEIS (except for Appendix T where the terms reflected usage of the Draft). In the Draft, the terms “permit” and “permittee,” in the context of grazing, were used generically to refer to the document authorizing use of the public lands within an established grazing district and the person authorized to graze cattle, respectively. However, because there are no grazing districts established within the John Day Basin, the authorizing document is called a grazing lease and the holder of the lease is the lessee. BLM direction for managing leases and permits are identical. The PRMP/FEIS uses the terms “grazing lease” and “lessee.”

The term “Appropriate Management Response” has been replaced by “Appropriate Response” and “prescribed natural fire” and “wildfire use” being succeeded by “Fire for Resource Benefit.”

## Management Alternatives

Consistent with FLPMA, all alternatives analyzed under this PRMP/FEIS are designed to meet three broad goals to:

- protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values;
- preserve and protect certain public lands in their natural condition, provide food and habitat for fish and wildlife and domestic animals, and provide for outdoor recreation and human occupancy and use; and
- recognize the nation’s need for domestic sources of minerals, energy, food, timber, and fiber from the public lands including implementation of the Mining and Minerals Policy Act of 1970 (84 Stat. 1876, 30 U.S.C. 21a) as it pertains to the public lands.

Four action alternatives were developed to address the identified issues and management concerns. A “No Action” alternative is required by law.

Alternative 1 is the “No Action” Alternative, which would continue existing management direction. Alternative 2 would best meet the purpose and need, and hence is the Preferred Alternative and the Proposed Resource Management Plan. Alternatives 3-5 represent different ways of responding to the issues and management concerns described in Chapter 1.

All alternatives have been modified between the Draft and this Proposed Management Plan. Changes reflect legislative actions; a decision to include guidance from the John Day River Plan in this document (rather than incorporation by reference) as Common to All Alternatives; input from BLM State and Washington offices; and in response to comments on the Draft RMP/EIS from the public, tribes, other federal agencies, and other governments.

The following briefly describes the main features of each of the five alternatives for resolving the key issues associated with managing BLM lands within the John Day Basin planning area (Landscape Health, Access and Travel Management, and Newly Acquired Lands along the North Fork John Day River). Chapter 2 provides a comprehensive description of each alternative, including management common to all alternatives.



# Key Features of the Alternatives

The following briefly describes the general theme of each of the five management alternatives for BLM lands within the John Day Basin planning area, particularly as they relate to key management issues described in Chapter 1 (Landscape Health, Access and Transportation, and Newly Acquired Lands on the North Fork John Day River). Following these alternative descriptions is Table 2-1, which lists key differences among alternatives, and more detailed descriptions of alternatives by actions, guidelines, and objectives for the various resources or resource uses.

## Alternative 1—No Action

This alternative would continue existing management as directed under the Two Rivers RMP (1986), John Day RMP (1985), and Baker RMP (1989) and their amendments. Key features of Alternative 1 include:

### Landscape Health

- Rangeland vegetation would be managed to achieve greater amounts of mid- or late seral conditions.
- The majority of forestlands would be managed to produce timber.
- All unplanned fire ignitions would be suppressed while allowing for the safety of the public and fire personnel.
- All grazing allotments, except for those on newly acquired lands along the North Fork John Day River, would be open to livestock use.

### Access and Travel Management

- More than half of the BLM lands in the planning area (233,342 acres) would be designated as Open to cross-country OHV use (see glossary for definitions of OHV designations). The OHV use on another 155,228 acres would be Limited to designated roads and trails, and 67,332 acres would be Closed to OHV use.
- An interim transportation system of 742 miles of BLM, State, County, and other agency routes across BLM lands would include: 572 miles of BLM routes open year-round; 61 miles of BLM routes open seasonally; and 250 miles of BLM routes that are currently “landlocked” and inaccessible to the public unless permission for access is acquired from private landowners. This interim transportation system, as well as the interim systems for each of the other four alternatives, would be in place until a more specific transportation planning effort is completed.

### North Fork John Day River (NFJDR) Acquired Lands

- The North Fork John Day River would have interim protection of the scenic, recreation, and fishery Outstandingly Remarkable Values pending a final determination of suitability for Wild and Scenic River status.
- The North Fork John Day River grazing allotments would continue to be closed to livestock use.
- All BLM-managed lands on the North Fork John Day River would continue to be managed as Visual Resource Management (VRM) Class III.



## Alternative 2 (Preferred Alternative—Proposed Resource Management Plan)

The BLM identified Alternative 2 as the preferred alternative. Key features of the Proposed Resource Management Plan (PRMP) include:

### Landscape Health

- **Vegetation:** Management would return community composition to within the Acceptable Range of Variability (ARV; see glossary) for all Biophysical Settings (BpS; see glossary) to the extent possible on BLM lands. Vegetation management would offer opportunities to provide products such as firewood, construction materials, or fuel for power generation when compatible with, and as a result of, managing for ecosystem health objectives.
- **Fuels and Fire Management:** The Wildland Urban Interface (WUI; see glossary) Suppression zone is identified because a wildfire would pose a high risk to human life and property. In the Appropriate Response zone, human life and property are not subject to as high a risk from wildfire as in the WUI. Depending on conditions, resource availability, and anticipated fire behavior, the appropriate response may range from suppression to taking no action and letting the fire burn within a desired perimeter to promote resource values while not placing life and property at risk. Fire and fuels management would also maintain or increase wildlife habitat diversity, improve ecosystem integrity, and reduce fuel levels to decrease the chance of extreme habitat loss.
- **Range Management:** A new grazing management tool (Grazing Decision Tree) would be utilized to determine future grazing availability if a lessee voluntarily relinquishes their lease. The grazing decision tree considers similar elements to those contained in the grazing matrix but was designed to address actual, rather than potential, conflict and demand.

### Access and Travel Management:

- OHV use would be allowed in the plan area, but would be limited to designated roads and trails, with a few exceptions. Cross-country OHV use (Open designation) would be allowed on 3,971 acres. OHV use on 315,693 acres would be Limited to designated roads and trails, and 137,169 acres would be Closed to OHV use.
- Seasonal travel restrictions inadvertently shown on Map 13C (Draft RMP/EIS, Alternative 2) within the Open OHV designation area have been corrected.
- An interim transportation system of 333 miles of BLM, State, County, and other agency routes across BLM lands would include: 86 BLM miles open year-round, 138 BLM miles open seasonally, and 9 miles of BLM routes that are currently “landlocked” and inaccessible to the public. The majority of closed roads under this alternative are currently inaccessible to the public.
- A comprehensive Access and Travel Management Plan would be prepared for the John Day Basin after completion of this RMP.

### North Fork John Day River Acquired Lands

- The North Fork John Day River would be recommended as suitable for Wild and Scenic River (WSR) designation with a classification of Scenic River Area.
- Most of the North Fork area would be managed as VRM Class II.
- Two of the nine allotments containing acquired lands in the North Fork John Day River area would be available for Reserve Forage Allotments (see glossary) or Closure, and seven would remain Closed.



## Alternative 3

This alternative is the same as the PRMP (Alternative 2) for most resources and uses. However, this alternative addresses some public comments from local stakeholders differently than the PRMP (Alternative 2). This alternative reflects a desire to continue traditional uses and look of the landscape. Other key features of Alternative 3 include:

### Landscape Health

- Same as the PRMP (Alternative 2), except this alternative would open allotments on the North Fork John Day River acquired lands to grazing.

### Access and Travel Management

- Same as the PRMP (Alternative 2), except about 4,571 acres would be designated Open to cross-country OHV use, and OHV use on 315,093 acres would be Limited to designated roads and trails.
- An interim transportation system of 879 miles of BLM, State, County, and other agency routes across BLM lands would include: 295 BLM miles open year-round, 475 BLM miles open seasonally, 134 BLM miles of roads currently closed in the acquired lands near the North Fork John Day River, and 250 miles of BLM routes that are currently “landlocked” and inaccessible to the public.

### North Fork John Day River Acquired Lands

- The eligible Wild and Scenic River segment of the North Fork John Day River would be recommended as suitable with a Scenic designation (Mallory Creek to river mile 20.4) and a Recreational designation (from Camas Creek to Mallory Creek). The Recreational designation would be recommended to accommodate more traditional motorized vehicle use.
- Most of the North Fork John Day River acquired land would be managed as VRM Class II.
- Much of the acquired lands in the North Fork John Day River area would be open to grazing.
- Grazing would be excluded from riparian areas.

## Alternative 4

This alternative is largely the same as the PRMP (Alternative 2); however the emphasis provides additional protections to social and ecological factors such as wilderness characteristics protection. This alternative is the most restrictive alternative relative to OHV use. Other key features of Alternative 4 include:

### Landscape Health

- Same as the PRMP (Alternative 2), except this alternative would apply a Grazing Decision Matrix with a high degree of sensitivity to social and ecological conflict while maintaining the same sensitivity to livestock grazing demand as the other action alternatives.

### Access and Travel Management

- The OHV designations would include: 2 acres Open; 303,069 acres Limited to designated routes (some seasonal restrictions); and 153,762 acres Closed.
- The interim transportation system would be the same as the PRMP (Alternative 2), with the exception of the Rudio Mountain area.



North Fork John Day River Acquired Lands

- Eligible river segments would not be recommended as suitable for designation by Congress as a Wild and Scenic River. Unsuitable river segments would be managed in accordance with other RMP management objectives.
- Most of the North Fork John Day River acquired land would be managed as VRM Class II.
- Grazing allotments on acquired lands near the North Fork John Day River would remain closed.

Alternative 5

Same as the PRMP (Alternative 2), except this alternative would apply the Grazing Decision Matrix as presented in the Draft RMP/EIS Alternative 2. Alternative 5 also addresses access and transportation issues related to OHV with less emphasis on providing access. Key features of Alternative 5 include:

Landscape Health

- Same as the PRMP (Alternative 2), except this alternative would apply the Grazing Decision Matrix.

Access and Travel Management

- The OHV designations would include: No areas Open to cross-country OHV use; 317,046 acres Limited to designated roads and trails; and 139,786 acres Closed.
- Management direction for trails and roads in Little Canyon Mountain SRMA was changed to preclude motorized use except for administrative access; with the exception of the State Highway, county road, and Forest Service trailhead access road.
- The interim transportation system would be the same as the PRMP (Alternative 2) with the exception of the changes in the Little Canyon Mountain SRMA and the Rudio Mountain area.

North Fork John Day River Acquired Lands

- Same as the PRMP (Alternative 2).



# Environmental and Social Consequences

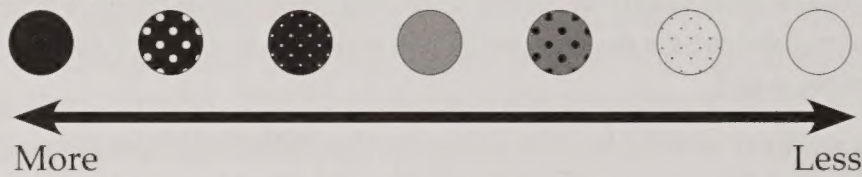
Table ES-1 evaluates the extent to which the alternatives meet the long-term goals of ensuring the long-term sustainability of a healthy and productive landscape and adding to community stability through resource use and enjoyment.

Relative rankings in Table ES-1 are based on the comparative net differences in effects of the management alternatives on each specified resource or resource use. The effects of alternative actions meet the purpose and need to varying degrees. These differences add-up to an overall net effect. Examples of indicators that differ in their outcomes across alternatives are also displayed. The specific effects are summarized in Table 2-24 in Chapter 2 and described in detail in Chapter 4.

It is difficult to address all needs across a broad range of resource values and land uses. Each of the alternatives involves compromise; however, Alternative 2 is preferred over the other alternatives because overall, it best meets the purpose and need for a revised plan. Alternative 2 is as good as, or better than, other alternatives at addressing resource or use issues. The possible exception is motorized recreation; the availability of off-road vehicle travel routes is greater in Alternative 3.

**Table ES-1. Synthesis of environmental consequences (including social, economic, and ecological) of management alternatives on resources and resource uses in the John Day River Basin plan area.**

To what relative degree do the alternatives meet the purpose and need, significant issues, and management concerns, as described in Chapter 1?

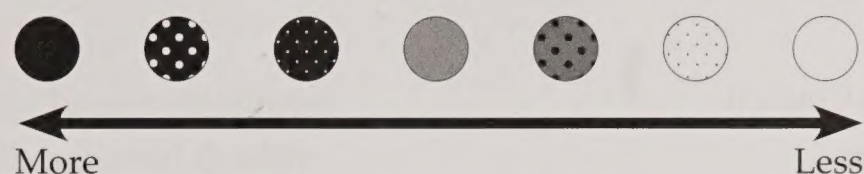


Issue 1: Landscape Health.						
Would the plan achieve healthy plant and animal communities? Would the plan allow fire to play its ecological role while helping to ensure public safety from wildfire?						
Resource or Resource Use	Examples of indicators that show differences in effects between alternatives.*	Alternative				
		1	2	3	4	5
Vegetation	Difference between current ecosystem conditions and the Acceptable Range of Variability (ARV).					
Fire and Fuels	Wildfire risk to communities in the wildland urban interface.					
Aquatic Resources	Difference between current and proper functioning conditions.					
Wildlife	Security habitat.					
Issue 2: Access and Travel Management.						
Would the plan result in a road system that would efficiently deliver goods, people, and services across the plan area? Would the plan provide for motorized and non-motorized recreation, while protecting natural and cultural resources?						
Access and Travel	Access to public lands. Road maintenance costs.					
Recreation	Availability of OHV routes and Open areas. Conflicts between OHV and other uses.					



Table ES-1 (continued). Synthesis of environmental consequences (including social, economic, and ecological) of management alternatives on resources and resource uses in the John Day River Basin plan area.

To what relative degree do the alternatives meet the purpose and need, significant issues and management concerns, as described in Chapter 1?



### Issue 3: North Fork John Day River.

Does the plan protect native fish, wildlife habitat, and public recreation on newly acquired and adjacent BLM lands along the North Fork John Day River?

Resource or Resource Use	Examples of indicators that show differences in effects between alternatives.*	Alternative				
		1	2	3	4	5
Wild and Scenic Rivers	Outstandingly Remarkable Values (ORVs).					
<b>Other Management Concerns*</b>						
Social and Economic Values	Employment and labor income.					
Soils	Erosion.					
Wilderness Characteristics	Maintenance of wilderness qualities.					
Wilderness Study Areas	Degree of protection of wilderness values.					
Visual Resources	Visual quality.					
Caves	Degree of habitat protection.					
Livestock Grazing	Available AUMs in areas of high use or ecological values.					

\* Management of the following concerns vary none or little in their effects across alternatives: Air Quality, Noxious Weeds, Wild Horses, Areas of Critical Environmental Concern, Back Country Byways, Native American Values, Paleontology, Cultural Values, Lands and Realty, Agriculture Lands Management, and Minerals and Energy.



# Acronyms and Abbreviations

ACEC - Area of Critical Environmental Concern  
ACS - Aquatic Conservation Strategy  
ADT - Average Daily Traffic  
AFRC - American Forest Resource Council  
AMP - Allotment Management Plan  
AML - Appropriate Management Level  
AMS - Analysis of the Management Situation  
APHIS - Animal and Plant Health Inspection Service  
AR - Appropriate Response  
ARPA - Archaeological Resources Protection Act of 1979  
ARV - Acceptable Range of Variability  
ASCO - Archaeological Society of Central Oregon  
ASQ - Allowable Sale Quantity  
ATV - All-Terrain Vehicle  
AUM - Animal Unit Month  
  
BA - Biological Assessment  
BECA - Bald Eagle Consideration Area  
BEMA - Bald Eagle Management Area  
BIA - Bureau of Indian Affairs  
BLM - Bureau of Land Management  
BMP - Best Management Practices  
BOR - Bureau of Reclamation  
BPA - Bonneville Power Administration  
BPS (BpS) - Biophysical Setting  
BS - Bureau Sensitive  
BSC - Biological Soil Crust  
  
CAA - Clean Air Act  
CAFO - Confined Animal Feeding Operation  
CAMP - Cooperative Area for the Management of Paleontology  
CCF - Cubic feet  
CEQ - Council on Environmental Quality  
CFR - Code of Federal Regulations  
CFS - Cubic Feet per Second  
COA - Conservation Opportunity Area  
COFMS - Central Oregon Fire Management Service  
COFP - Central Oregon Fire Plan  
CORA - Central Oregon Resource Area  
CRBG - Columbia River Basalt Group  
CRI - Community Resilience Index  
CRMP - Coordinated Resource Management Plan  
CTTM - Comprehensive Travel and Transportation Management



CTUIR - Confederated Tribes of the Umatilla Indian Reservation  
CTWSRO - Confederated Tribes of the Warm Springs Reservation of Oregon  
CWA - Clean Water Act  
CWPP - Community Wildfire Protection Plan  
DBH - Diameter at Breast Height  
DEIS - Draft Environmental Impact Statement  
DEQ - Department of Environmental Quality  
DFC - Desired Future Condition  
DMA - Decision Management Agency  
DNF - Deschutes National Forest  
DOI - Department of the Interior  
DPS - Distinct Population Segment  
DOGAMI - Department of Geology and Mineral Industries (Oregon)  
DR - Decision Record  
DRMP - Draft Resource Management Plan  
EA - Environmental Assessment  
EFH - Effective Fish Habitat  
EFU - Exclusive Farm Use  
EIS - Environmental Impact Statement  
EMS - Existing Management Situation  
EPA - United States Environmental Protection Agency  
ERMA - Extensive Recreation Management Area  
ERU - Ecological Rating Units  
ESA - Endangered Species Act  
ESI - Ecological Site Inventory  
FACA - Federal Advisory Committee Act  
FCRPA - Federal Cave Resources Protection Act  
FEIS - Final Environmental Impact Statement  
FLPMA - Federal Land Policy and Management Act  
FLTFA - Federal Land Transaction Facilitation Act (2000)  
FMU - Fire Management Unit  
FR - Federal Register  
FRCC - Fire Regime Condition Class  
FS - Forest Service  
FY - Fiscal Year  
GHG - Greenhouse Gas  
GIS - Geographic Information System  
HCA - Habitat Conservation Areas  
HCP - Habitat Conservation Plan  
HM - Head Month  
HMA - Herd Management Area  
HMP - Habitat Management Plan



HRV - Historic Range of Variability

HUC - Hydrologic Unit Code

IBLA - Interior Board of Land Appeals

ICBEMP - Interior Columbia Basin Ecosystem Management Project

IDT - Interdisciplinary Team

IM - Instruction Memorandum

IMP - Interim Management Policy for Lands Under Wilderness Review

INFISH - Inland Native Strategies for Managing Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, Western Montana, and portions of Nevada

ISA - Instant Study Area

ISSSSP - Interagency Special Status Sensitive Species Program

IWM - Integrated Weed Management

JDB - John Day Basin

JDBRMP - John Day Basin Resource Management Plan

KLA - Known Linkage Area

LAC - Limits of Acceptable Change

LAU - Lynx Analysis Units

LCM - Little Canyon Mountain

LWC - Lands with Wilderness Characteristics

LWCF - Land and Water Conservation Fund

MBF - Thousand Board Feet

MIST - Minimum Impact Suppression Tactics

MLRA - Major Land Resource Area

MMBF - Million Board Feet

MMHOS - Millimhos (a millimho is a unit of electrical conductance)

MO - Management Objectives

MOU - Memorandum of Understanding

MW - Megawatts

MRDG - Minimum Requirements Decision Guide

MYA - Million Years Ago

NF - National Forest

NFJDR - North Fork John Day River

NHPA - National Historic Preservation Act

NEPA - National Environmental Policy Act

NMFS - National Marine Fisheries Service

NOALE - Northeast Oregon Assembled Land Exchange

NOI - Notice of Intent

NPS - National Park Service

NRCS - Natural Resource Conservation System

NRHP - National Register of Historic Places

NSO - No Surface Occupancy

NSS - National Speleological Society



NVUM - National Visitor Use Monitoring  
NWPCC - Northwest Power and Conservation Council  
  
OAR - Oregon Administrative Rules  
ODA - Oregon Department of Agriculture  
ODEQ - Oregon Department of Environmental Quality  
ODF - Oregon Department of Forestry  
ODFW - Oregon Department of Fish and Wildlife  
ODOT - Oregon Department of Transportation  
OEF - Oregon Eagle Foundation  
OHV - Off-Highway Vehicle  
OMD - Oregon Military Department  
OHIMS - Oregon Heritage Information Management System  
OLEA - Oregon Land Exchange Act of 2000  
ONDA - Oregon Natural Desert Association  
ONHP - Oregon Natural Heritage Program  
OPRD - Oregon State Parks and Recreation Department  
ORV - Outstandingly Remarkable Value  
OSU - Oregon State University  
OWQI - Oregon Water Quality Index  
OWRD - Oregon Water Resources Department  
  
PACFISH - Pacific Anadromous Fish Strategy (interim strategy for managing Pacific anadromous fish-producing watersheds in eastern Oregon and Washington, Idaho, and portions of California)  
PEIS - Programmatic Environmental Impact Statement  
PFC - Proper Functioning Condition  
PILT - Payments In Lieu of Taxes  
PNC - Potential Natural Conditions  
PNW - Pacific Northwest  
PRA - Pacific Recovery Area  
PRMP/FEIS - Proposed Resource Management Plan/Final Environmental Impact Statement  
PSQ - Probable Sale Quantity  
PWR - Public Water Reserve  
  
RAC - Resource Advisory Council  
R&PP - Recreation and Public Purposes Act  
RCA - Riparian Conservation Area  
RCRA - Resource Conservation and Recovery Act  
RD - Ranger District  
RFA - Reserve Forage Allotment  
RHCA - Riparian Habitat Conservation Area  
RM - River Mile  
RMA - Riparian Management Area  
RMO - Riparian Management Objective  
RMP - Resource Management Plan  
RNA - Research Natural Area  
ROD - Record of Decision  
ROW - Right-of-Way  
RV - Recreational Vehicle



SAR – Soil Absorbency Ratio  
SCORP - Statewide Comprehensive Outdoor Recreation Plan  
SF - South Fork  
S&Gs - Standards and Guidelines  
SHPO - State Historical Preservation Office  
SOC - Species of Concern  
SR - State Route  
SRMA - Special Recreation Management Area  
SRP - Special Recreation Permit  
SSURGO - Soil Survey Geographic Database  
SSW - State Scenic Waterways  
Stat. - United States Statutes at Large  
STATSGO - State Soil Geographic Database  
SUP - Special Use Permit  
SVIM - Soil-Vegetation Inventory Method  
SWCD - Soil and Water Conservation District  
  
TCP - Traditional Cultural Property  
T&E - Threatened and Endangered  
TGA - Taylor Grazing Act of 1934  
TMDL - Total Maximum Daily Load  
TMU - Timber Management Unit  
TNC - The Nature Conservancy  
  
UDRMP - Upper Deschutes Resource Management Plan  
USACE - United States Army Corps of Engineers  
U.S.C. - United States Code  
USDA - United States Department of Agriculture  
USDC - United States Department of Commerce  
USDI - United States Department of the Interior  
USFS - United States Forest Service  
USFWS - United States Fish and Wildlife Service  
USGS - United States Geological Survey  
  
VQO - Visual Quality Objectives  
VRM - Visual Resource Management  
  
WEPP - Water Erosion Prediction Project  
WFDSS - Wildland Fire Decision Support System  
WFRHBA - Wild Free Roaming Horse and Burro Act  
WQMP - Water Quality Management Plan (State)  
WQRP - Water Quality Restoration Plan (Federal)  
WSR - Wild and Scenic River  
WSA - Wilderness Study Area  
WSRA - Wild and Scenic Rivers Act  
WUI - Wildland Urban Interface



# Chapter 1

## Introduction





# Chapter 1 Introduction

The purpose of this chapter is to provide an overview of the John Day Basin PRMP and FEIS. This chapter describes the project, the study area, and the scope of the study. It also provides a brief history of the project and a summary of the findings of the study.



The study area is located in the John Day Basin, which is a large area of land in the state of Oregon. The study area is bounded by the John Day River to the north and the Snake River to the south. The study area is divided into several sub-areas, each of which is described in detail in the following chapters.



# Overview

Currently, the Bureau of Land Management (BLM) lands within the planning area (Map 1) are being managed under three plans. The Two Rivers Resource Management Plan (1986) addresses management in the western portion of the planning area; the John Day Resource Management Plan (1985) addresses management in most of the eastern portion of the planning area; and the Baker Resource Management Plan (1989) addresses management of small portions in Morrow and Umatilla Counties.

The land use planning process is the key tool the BLM uses to manage resources and designate uses on public lands in coordination with tribal, federal, state, and local governments; land users; and interested members of the public. Generally, a Resource Management Plan (RMP) revision does not result in wholesale change of current management. Accordingly, this RMP incorporates new information and regulatory guidance, and provides management direction where it may be lacking or requires clarification to resolve land use issues or conflicts. For certain activities, the BLM will carry forward current management direction that has proven effective and requires no change. Existing management objectives, actions, and guidelines are described in Chapter 2 under the sections "Management Common to All Alternatives" or "Alternative 1 – No Action." Management within the planning area is also guided by public policies and legislation. Relevant legal authorities are briefly summarized in Appendix A.

The BLM has prepared this Final Environmental Impact Statement (FEIS) to analyze the environmental effects that could result from implementation of a John Day Basin Resource Management Plan (JDBRMP). The JDBRMP will provide direction for managing public lands in eastern Oregon under the administrative jurisdiction of the Central Oregon Resource Area of the Prineville District BLM.

During the time between publishing of the Draft RMP/EIS and publication of the Proposed RMP/Final EIS, Congress passed the Omnibus Public Land Management Act of 2009 that the President signed into law (Public Law 111-11) on March 30, 2009. The Act designated the Spring Basin Wilderness and also contained several Spring Basin-specific land exchange provisions that the BLM will begin working on. That work includes getting appraisals, conducting hazardous material clearances, and conducting other lands and realty-related work outside the scope of this RMP.

## Vision

The current RMP's guiding management of BLM-administered lands in the project area is being revised under the JDBRMP according to guidance in the Federal Land Policy and Management Act (FLPMA) of 1976 (43 Code [USC] 1701 et seq.) and BLM's Land Use Planning Handbook (H-1601). An EIS is incorporated into this document as required by the National Environmental Policy Act of 1969 (NEPA) and Council on Environmental Quality regulations for implementing NEPA (CEQ 1978, 40 CFR 1500-1508). Consistent with FLPMA, all alternatives analyzed under this PRMP/FEIS are designed to meet three broad goals to:

- Protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values;
- Preserve and protect certain public lands in their natural condition, provide food and habitat for fish and wildlife and domestic animals, and provide for outdoor recreation and human occupancy and use; and
- Recognize the Nation's need for domestic sources of minerals, food, timber, and fiber from the public lands including implementation of the Mining and Minerals Policy Act of 1970 (84 Stat. 1876, 30 U.S.C. 21a) as it pertains to the public lands.

In conformity with FLPMA, the mission of the BLM is to sustain the health, diversity and productivity of the public lands for the use and enjoyment of present and future generations.



# BLM Mission and Philosophy

## Mission of the Bureau of Land Management in Oregon and Washington

The BLM's mission is to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations. In Oregon and Washington, the BLM provides innovative leadership in managing natural resources of the Pacific Northwest.

We are committed to functioning with technical excellence, fiscal responsibility, and human sensitivity in fulfilling the following objectives:

- *Instilling a stewardship ethic for conservation and prudent use of the land and its resources.*
- *Promoting public partnerships and global policies that sustain health and diversity of ecosystems.*
- *Fostering social and economic responsibility in the use and management of lands and resources.*

## Planning Criteria and Legislative Constraints

The Federal Land Policy and Management Act is the primary authority for the BLM's management of public lands. This law provides the overarching policy by which public lands will be managed and establishes provisions for land use planning, land acquisition and disposition, administration, range management, rights-of-way, designated management areas, and the repeal of certain laws and statutes. The National Environmental Policy Act (NEPA) provides the basic national charter for environmental responsibility and requires the consideration and public availability of information regarding the environmental impacts of major federal actions significantly affecting the quality of the human environment. In concert, these two laws provide the guidance for all BLM activities.





## How BLM Employees Get Direction to Manage Public Lands

Direction for management of public lands administered by the BLM is multi-tiered.

First, Congress authorized the BLM to manage lands and passed laws that provide overall objectives for management of those lands. While one law, the Federal Land Policy and Management Act, authorizes the BLM to manage specific lands, other laws can provide direction to many government agencies. For example, the Endangered Species Act establishes guidance that must be followed by all federal agencies to protect threatened and endangered species.

The Department of the Interior or the BLM then creates regulations and policies that describe how the BLM will act to implement the direction of Congress. Regulations are initially published in the Federal Register and subsequently in the Code of Federal Regulations.

Policy direction is then provided to the BLM staff in the form of Manuals and Handbooks. For teams preparing Resource Management Plans, the primary references are the NEPA Manual and Handbook and the Planning Manual and Handbook.

Executive Orders can also direct and guide management. These orders are issued under the authority of, and signed by the President. An executive order generally recognizes one or more laws and provides instructions for implementing those laws to one or more federal agencies.

Laws created by Congress (legislative guidance) and executive direction (executive guidance) provided through Department of the Interior or BLM regulations and policy and executive orders that apply to this planning process are listed and briefly described in Appendix A.

Resource Management Plans establish specific objectives and guidance for managing lands within a defined planning area or describe specific project-level stipulations. This guidance is described in Chapter 2 of this document (Alternatives).

Implementation-level (project-level) guidance is the equivalent of a blueprint and architect instructions. Depending on the size and type of project, planning at the project level may be almost as complex as developing a Resource Management Plan or may result in a very simple and small document. Project-specific, implementation-level guidance will not be addressed nor described in this document.

A final note is that certain regulations generated by the BLM and other agencies provide guidance that directly applies to day-to-day BLM activities. These include regulations for the management of cultural resources, protection of endangered species, many lands procedures, and several other activities. This planning process does not have the authority to modify such guidance.



# The Planning Process

In accordance with 43 CFR 1610.4, preparation of an RMP involves interrelated steps as described in Table 1-1 below.

**Table 1-1. BLM Planning Process.**

Step	Description	Timeframe
Step 1 — Identify planning issues	Issues, concerns, and opportunities are identified through a scoping process that includes the BLM, the public, Indian tribes, other federal agencies, and state and local governments. The BLM publishes a Notice of Intent (NOI) in the Federal Register to inform the public of the planning process and begin the scoping process.	Fall 2005 to Fall 2006. NOI published February 2006.
Step 2 — Develop planning criteria	Planning criteria are created to ensure decisions are made to address the issues pertinent to the planning effort. Planning criteria are derived from a variety of sources, including applicable laws and regulations, existing management plans, coordination with other agencies' programs, and the results of public and agency scoping. The planning criteria may be updated and changed as planning proceeds.	Ongoing.
Step 3 — Collect data and information	Several BLM specialists analyze the planning area's resources, environmental conditions, uses, and current management.	Ongoing.
Step 4 — Analyze management situation	Public scoping meetings are held to help identify issues and concerns. This initial analysis was included in the scoping report. The scoping report summarizes comments from public meetings and other outreach, and uses this information along with staff input to refine issues and planning criteria.	Analysis of the Management Situation (AMS) and Scoping Report published Fall 2006.
Step 5 — Formulate alternatives	The BLM formulates a range of reasonable management alternatives to address issues identified during scoping.	January 2007 to November 2007.
Step 6 — Assess alternatives	This step involves estimating the physical, biological, economic, and social effects of implementing each alternative in order to provide a comparative evaluation of impacts.	November 2007 to July 2008.
Step 7 — Select preferred alternative	The alternative that best resolves planning issues is identified as the preferred alternative. The Draft RMP/EIS is prepared and distributed for a 90-day public review.	Draft RMP/EIS August 2008.
Step 8 — Select RMP	After comments to the draft document have been received and analyzed, the Proposed RMP/Final EIS is refined as needed; published; and then made available for a public protest period of 30 days. Following resolution by the BLM Director of any protests or Governor's consistency review comments, the BLM State Director signs the Record of Decision to approve the RMP/EIS.	Proposed RMP/Final EIS: estimated March 2012. Approved RMP/ROD: estimated August 2012.
Step 9 — Implementation and Monitoring	Management measures outlined in the approved plan are implemented on the ground, and monitoring is conducted to test their effectiveness in resolving the identified issues and achieving the desired results.	Ongoing after RMP approval.



As directed by FLPMA, during development of this RMP, the BLM has:

- Used and observed the principles of multiple use and sustained yield;
- Used a systematic interdisciplinary approach to integrate consideration of physical, biological, economic, and other sciences;
- Given priority to the designation and protection of ACECs;
- Relied, to the extent it is available, on the inventory of the public lands, their resources, and other values;
- Considered present and potential uses of the public lands;
- Considered the relative scarcity of resource values and the availability of alternative means for realization of those values;
- Weighed long-term benefits against short-term benefits to the public;
- Provided for compliance with applicable pollution control laws, including state and federal air, water, noise, or other pollution standards or implementation plans; and
- To the extent consistent with the laws governing the administration of the public lands, coordinated land use inventory, planning, and management activities with the land use planning and management programs of other federal departments and agencies, state and local governments, and Indian tribes.

Planning criteria are the standards, rules, and guidelines that help to guide data collection, alternative formulation, and alternative selection in the RMP process. In conjunction with the planning issues, planning criteria assure the planning process is focused. The criteria also help guide the final plan selection and provide a basis for judging the responsiveness of the planning options.

## Planning Criteria

Preliminary planning criteria were developed prior to public scoping and refined based on public input to the AMS. The following criteria set the focus for the planning process and guide decision making by topic.

- The RMP planning effort will be collaborative. The BLM will strive to ensure that its management decisions complement other planning jurisdictions and adjoining properties within the boundaries described by law and federal regulations.
- The public land in the planning area will provide a diverse array of opportunities that result in a sustained flow of economic and social benefits to communities and provide a diversity of recreation opportunities while continuing to protect visual quality, wildlife and fish habitats, and other resources and resource uses.
- The planning process will identify existing guidance and establish new guidance upon which the BLM will rely to manage public lands within the planning area.
- The plan will comply with all applicable laws, regulations, and current policies.
- The RMP will recognize all valid existing rights.
- Resource allocations will be reasonable and achievable given available technological and budgetary constraints.
- As part of this RMP process, the BLM will analyze areas for potential designation as ACECs in accordance with 43 CFR 1610-7-2, and river corridors for recommendation and designation under the Wild and Scenic Rivers Act (WSR Act).
- All previously established Wilderness Study Areas (WSA) will continue to be managed for wilderness values and character until Congress designates them as wilderness areas, or releases them for multiple use management, unless management direction as set forth in the approved RMP continues management for wilderness values and character regardless of their release by Congress.



# Relationship to BLM Policies, Plans, and Programs

Since development and approval of the Baker, John Day, and Two Rivers RMPs in the 1980s, there have been amendments to provide additional land management direction. As the land use plan guidance is put into practice on the ground, implementation-level planning is directed by BLM policy, program-specific guidance, and Best Management Practices.

All future resource authorizations and actions will conform to, or be consistent with the decisions contained in the approved RMP. All existing operations and activities authorized under permits, contracts, cooperative agreements, or other authorizations will be modified, as necessary, to conform to the approved RMP within a reasonable time frame. However, the plan will not repeal valid existing rights on public lands. A valid existing right is a claim or authorization that takes precedence over the decisions developed in this plan. If such authorizations come up for review and can be modified, they will also be brought into conformance with the plan.

## Related Plans

The BLM planning regulations require that BLM plans be consistent with officially approved or adopted resource-related plans of other federal, state, local, and tribal governments to the extent those plans are consistent with federal laws and regulations applicable to public lands. Plans formulated by federal, state, local, and tribal governments that relate to management of lands and resources in the John Day Basin have been reviewed and considered in development of the John Day Basin RMP/EIS. These plans include the following:

### Federal Plans

- John Day River Management Plan (USDI BLM 2001c)
- Canada Lynx Conservation Assessment and Strategy (USDA Forest Service and USFWS 2000)
- Summary of the Draft EIS, Northern Rockies Lynx Amendment (USDA Forest Service and USDI BLM 2004)
- PACFISH (USDA and USDI 1995)
- Section 368 of the Energy Policy Act of 2005 (designation of West-wide energy corridors) is being implemented through an interagency Programmatic Environmental Impact Statement (PEIS). The Final PEIS provides plan amendment decisions that address numerous energy corridor related issues, including the utilization of existing corridors (enhancements and upgrades), identification of new corridors, supply and demand considerations, and compatibility with other corridor and project planning efforts. The approved PEIS amended existing plans and is incorporated in the JDBRMP.
- National Forest Land and Resource Management Plans for the adjacent Ochoco, Malheur, Umatilla, and Wallowa-Whitman National Forests.

### Tribal Government Plans and Treaties

- The Confederated Tribes of the Warm Springs and the Confederated Tribes of the Umatilla Reservation consider the John Day River Management Plan (USDI BLM 2001c) as the management plan for the John Day Wild and Scenic River (B. Cunninghame, pers. comm. 1/2007).
- Pine Creek Habitat Management Plan.
- Treaties of 1855.



## State and County Plans

- The Oregon Conservation Strategy (Oregon Department of Fish and Wildlife 2006).
- County land use plans.

## Collaboration

The benefits of enhanced collaboration among agencies in the preparation of NEPA analyses include disclosing relevant information early in the analytical process; applying available technical expertise and staff support; avoiding duplication with other federal, state, tribal, and local procedures; and establishing a mechanism for addressing intergovernmental issues. Collaboration and consultation are discussed further in Chapter 5.

## Policy

Implementation of the RMP begins when the Oregon/Washington BLM State Director signs the Record of Decision for the Final Environmental Impact Statement (FEIS)/RMP. Implementation of decisions made in the FEIS/RMP will be a function of the BLM budgeting and collaborative implementation planning processes (IM 2008-041).

## Purpose and Need for a Revised Plan

The purpose of the JDBRMP is to provide direction for managing public lands in eastern Oregon that are primarily under the jurisdiction of the Prineville District BLM. The JDBRMP will revise the Two Rivers RMP (1986); the John Day RMP (1985); and the Baker RMP (1989), all of which address management of BLM lands in the planning area. The JDBRMP will provide objectives, land use allocations, and management direction to maintain, improve, or restore resource conditions over the long term. It will specify where and under what circumstances particular activities will be allowed on BLM-administered public lands. A primary goal of the JDBRMP is to develop management practices that ensure long-term sustainability of a healthy and productive landscape, and add to community stability through resource use and enjoyment. The JDBRMP generally will not include a description of how particular programs or projects will be implemented or prioritized; those decisions are deferred to implementation-level planning.

There is a need for a new John Day Basin RMP because information and circumstances have changed since the original plans were approved, including:

- Changed circumstances and new information on economic, social, and biologic conditions within the planning area;
- New laws, regulations, and policies that invalidate or supersede previous decisions;
- Changed user demands and activities that create new resource effects and user conflicts; and
- Changed acceptance of impacts.

These conditions, and the fact that some of the existing plans have been amended, drive the need for an inclusive comprehensive plan that provides updated and clear direction to both the BLM and the public.



# Planning Area

## Physical Boundaries

The RMP planning area encompasses 5,450,225 acres, mostly within the John Day River basin of eastern Oregon (Map 1). Within the planning area, the BLM manages about 456,000 acres of public land surface. The BLM-managed lands fall in eight Oregon counties—Grant, Wheeler, Gilliam, Wasco, Sherman, Umatilla, Jefferson, and Morrow.

The **planning area** includes *all* land within the planning boundary, regardless of jurisdiction.

The **decision area** covers only those lands administered by the BLM.

The boundary of the planning area generally follows watershed boundaries and, therefore, also includes portions of Baker and Malheur counties although there are no BLM lands within those two counties. Collectively, the lands that the BLM administers (surface and mineral estate) are considered the “decision area.” Of the surface area, 441,987 acres are in the Central Oregon Resource Area of the Prineville District BLM, and 14,622 acres are in the Baker Resource Area of the Vale District BLM. This RMP would provide direction for BLM lands within the planning area that are within the boundaries of both the Prineville District and the Baker Resource Area of the Vale District. Private and county lands, as well as lands administered by state or other federal governments, are not subject to decisions made in this RMP.

The planning area can be grouped into the following geographical areas:

1. **Lower John Day River**—Land primarily in the canyon, but also includes uplands north of Clarno, as far away as Horn Butte.
2. **Sutton Mountain/Bridge Creek**—Lands upstream of Clarno to Service Creek, including the Bridge Creek, Bear Creek and Sutton Mountain areas. The southwestern portion of this area is outside of the John Day Basin, in the Deschutes watershed, but is included in the planning area for logistical reasons.
3. **Rudio Mountain/Johnson Heights**—Area upstream of Service Creek to Dayville, including the Rudio Mountain, Squaw Creek, and Johnson Heights areas.
4. **South Fork John Day River**—Area from Dayville south along the South Fork of the John Day River, Cottonwood, Birch and Rock Creeks, but north and east of the Harney and Crook County lines.
5. **Upper Main Stem John Day River**—Lands in the Upper John Day Valley including Little Canyon Mountain, and Dixie and Standard Creeks. Three BLM parcels within the planning area are south of the John Day Basin, in the Silvies River watershed, but are included for logistical reasons.
6. **North Fork John Day River**—Lands upstream of Monument, along the North Fork of the John Day River to Camas Creek, and north of Highway 402.

## Social and Economic Setting

Although the planning area encompasses parts of 10 counties (most of Grant, Wheeler, and Gilliam, and smaller portions of Jefferson, Umatilla, Sherman, Wasco, Morrow, Malheur, and Baker), there are different characteristics of human history, values and lifestyles within each county. While not in the planning area, Union and Crook counties are adjacent and can be considered economically and socially linked given the connecting transportation system, integrated markets, and communities.

Prior to European settlement, indigenous American Indians occupied and used the planning area. The northern portion was used by cultures oriented to the Columbia Plateau, and the southern portion was used by cultures influenced by the Great Basin. These two populations represent separate language groups, but the boundary between the two culture areas appears to have been fluid. People, goods, and ideas from these adjacent cultural areas variously merged or contracted depending on the vagaries of climate and social conditions. Hunting, gathering, and fishing were the traditional economic pursuits conducted by these nomadic people.



After the arrival of Euro-Americans, treaties were signed with affected tribes within the planning area. Reservations and ceded land rights were established in the treaties of 1855. Those rights allowed continuation of traditional social and economic pursuits within public lands through the present day.

An influx of homesteaders and gold miners moved to the area in the latter part of the 19th century. As the mining boom subsequently declined, farming, ranching, and timber grew in importance. Although forest activities have waned in the last several decades, the area still has several lumber mills. Tourism provides some economic benefit to the area and may be increasing in importance. Hunting, fishing, and rafting bring many visitors to the basin in summer and fall as thousands of enthusiasts migrate to the area for several days to weeks at a time.

Current cultural identity within the John Day Basin varies, as shown in a recent report from community field work commissioned by the BLM (Priester *et al.* 2006). The report suggests residents in Grant County relate in terms of cultural identity to Baker City and La Grande rather than to Bend for regional affiliation. In essence, Grant County residents consider themselves part of "Eastern" Oregon. Residents in Wheeler County relate more to Prineville and Bend rather than to the Columbia River area or Baker County area. Wheeler County residents consider themselves part of "Central" Oregon or the "High Desert" (Priester *et al.* 2006).

The concerns among residents and the impacts to communities from public land management decisions vary. Some concerns arise simply because of the intermixed land ownership patterns where management actions (or inaction) on one piece of land can affect actions or values on neighboring land. Other concerns associated with the social and economic environment focus on changes to recreation, forestry, livestock grazing, and other land uses as a result of increased population, economic growth, and continuing development in the planning area.

## Issues Identified During Scoping

### Scoping Process

Although formal public scoping began with publication of the Notice of Intent in the Federal Register in February 2006, the BLM planning team actively pursued public input on planning issues and concerns both before and after that date in a variety of ways. A full scoping report was published in the Analysis of the Management Situation (AMS) and is available on the JDBRMP Web site (<http://www.blm.gov/or/districts/prineville/index.php>). A summary of the scoping report is provided below.

One of the first outreach approaches began in fall 2005, when the BLM contracted with James Kent Associates, Inc. to conduct interviews with residents throughout the planning area. The subsequent report identified local concerns related to public land management; social and economic trends affected by land use decisions; and opportunities for further communication between community residents and BLM. The report also recommended communication strategies for each geographic area, such as the best time and place for meetings, key people to involve, and appropriate methods of local communication. Generally speaking, residents appreciate personal connection and want a planning process that builds off local interests and includes national interests in a positive manner.

In early January 2006, the BLM partnered with Wheeler County, the cities of John Day and Canyon City, and the Sonoran Institute to host two workshops to assess the economic profile of communities in the planning area, identify trends, and discuss how BLM might affect those trends. Both workshops, one in Fossil (Wheeler County) and the other in John Day (Grant County), were well attended by a wide variety of local officials, business owners, and residents.

In March 2006, the BLM held five public meetings (Forest Grove, Bend, John Day, Fossil, and Pendleton) to invite the public to help identify planning issues and concerns relating to the management of resources and resource uses on BLM-administered lands in the planning area. The BLM also met periodically with the John Day/Snake Resource Advisory Council, which represents a variety of public interests and with a group of cooperating agencies consisting of representatives of federal agencies, American Indian tribal representatives, and state and local governments (40 CFR 1508.15).



The BLM provided periodic newsletters, newspaper advertisements, news releases, and a project web site to inform the public of public meetings, public comment opportunities, the planning schedule, and contact information. Following the public scoping process, and extensive review of the existing RMPs and new information, the BLM summarized the issues in the AMS, published in fall 2006. In spring 2007, the BLM held another round of public meetings (Fossil, John Day, Bend, and Salem) to refine the issues and gather information on criteria to use during development of alternatives. The refined issue descriptions are below.

**The land use planning process is issue driven.**

*Planning issues* are disputes or controversies about existing and potential land and resource allocations, levels of resource use, production, and related management practices.

*Scoping* is a collaborative public involvement process to identify planning issues to be addressed.

## Issues Addressed

Issue identification is the first step of the nine-step BLM planning process (see Table 1-1). A planning issue is a major controversy or dispute regarding management of resources or uses on public lands that can be addressed in a variety of ways. The issues drive the formulation of alternatives considered in the EIS (Chapter 2). The three main issues the BLM addresses in this RMP are landscape health, access and travel management, and management of land acquired near the North Fork John Day River. These issues are described below.

### Issue 1: Landscape Health

**How should public land be managed to achieve healthy plant and animal communities?**

**Where is it appropriate to manage unplanned fires to achieve resource management goals and objectives?**

There are opportunities to improve sustainability and resiliency of terrestrial vegetation conditions and to reduce the risk of uncharacteristic losses from insect and disease outbreak or severe unplanned fires through management actions such as thinning forest stands to reduce uncharacteristic densities and use of fire to reduce amounts and concentrations of hazardous fuels. Determining locations and the best methods for meeting these desired conditions can be achieved by comparing current vegetative conditions with those predicted to occur within historic or acceptable ranges. The alternatives display options for prioritizing areas for treatment, based in part on amount of deviation of current conditions from desired ones, and other resource needs.

The JDBRMP will include new direction and science from many sources, including the:

- Interior Columbia Basin Ecosystem Management Project (ICBEMP).
- USDA Forest Service-Department of the Interior-The Nature Conservancy LANDFIRE Project (spatial distribution of, and acceptable ranges of variation for Biophysical Settings [BpS]; spatial data of Fire Regime Condition Class).
- Intergovernmental Panel on Climate Change (IPCC 2007.)
- National Management Strategy for Motorized Off-highway Vehicle Use on Public Lands (2001) , a proactive BLM OHV Strategy to determine and implement better on-the-ground motorized off-highway vehicle management solutions. This strategy resulted from extensive public input with a diverse range of interest groups interested in OHV use on BLM public land (BLM publication No. BLM/WY/PL-01-006+1610. January, 2001; [http://www.blm.gov/ohv/OHV\\_FNL.pdf](http://www.blm.gov/ohv/OHV_FNL.pdf)).
- 303(d) listing of stream channels that are not addressed by existing management plans.

The BLM has coordinated with the Oregon Department of Fish and Wildlife (ODFW) to describe existing and desired winter range for big game. The alternatives include criteria for deciding where resource uses may need to be modified to protect, mitigate, or restore important plant communities, wildlife habitats, and sensitive species.

Fire is an important ecological component, as well as a primary public safety concern. The RMP will identify areas within the planning area where desired conditions may be met through the use of fire as a management tool.



The RMP will incorporate new local and national emphases and techniques for managing fuels within defined wildland urban interface areas, such as those in the National Fire Plan (August 2000) or those identified through local Community Wildfire Protection Plans.

Alternatives explore ways in which this issue can be addressed in conjunction with multiple use outputs such as livestock, biomass energy, and timber production.

## **Issue 2: Access and Travel Management**

**How should the BLM design a road system to efficiently deliver goods, people, and services across the planning area?**

**What opportunities will BLM provide for motorized recreation, while protecting natural and cultural resources?**

User demands have increased, particularly for recreational access and use of roads for community transportation needs, in some cases resulting in conflicts between uses and concerns about natural resource damage. Many of the BLM transportation facilities in the John Day Basin have never been designated with a maintenance level or assigned a maintenance schedule.

Though actual use data for the planning area is lacking, it appears that OHV use is increasing consistent with the high level of OHV sales nationally (Cordell 2005). From scoping it is clear that OHV users desire to maintain and in some instances increase OHV opportunities. Other groups have expressed a desire to have OHV use curtailed in order to protect wildlife, avoid encounters on trails with rapidly moving and loud OHVs, and decrease noise near their residences. Existing plans do not adequately address the impacts of widespread use by OHVs. Due to new OHV restrictions on National Forests in and near the planning area, the BLM expects increased demand for use of BLM-managed lands by OHV and other motorized vehicles.

The BLM policy requires all OHV area designations to be completed at the RMP level. There are no existing BLM designated motorized trail or motorized vehicle route systems despite increasing demand. There are also no existing designated hiking, horseback riding, and mountain bike trails or any other designated non-motorized trail systems.

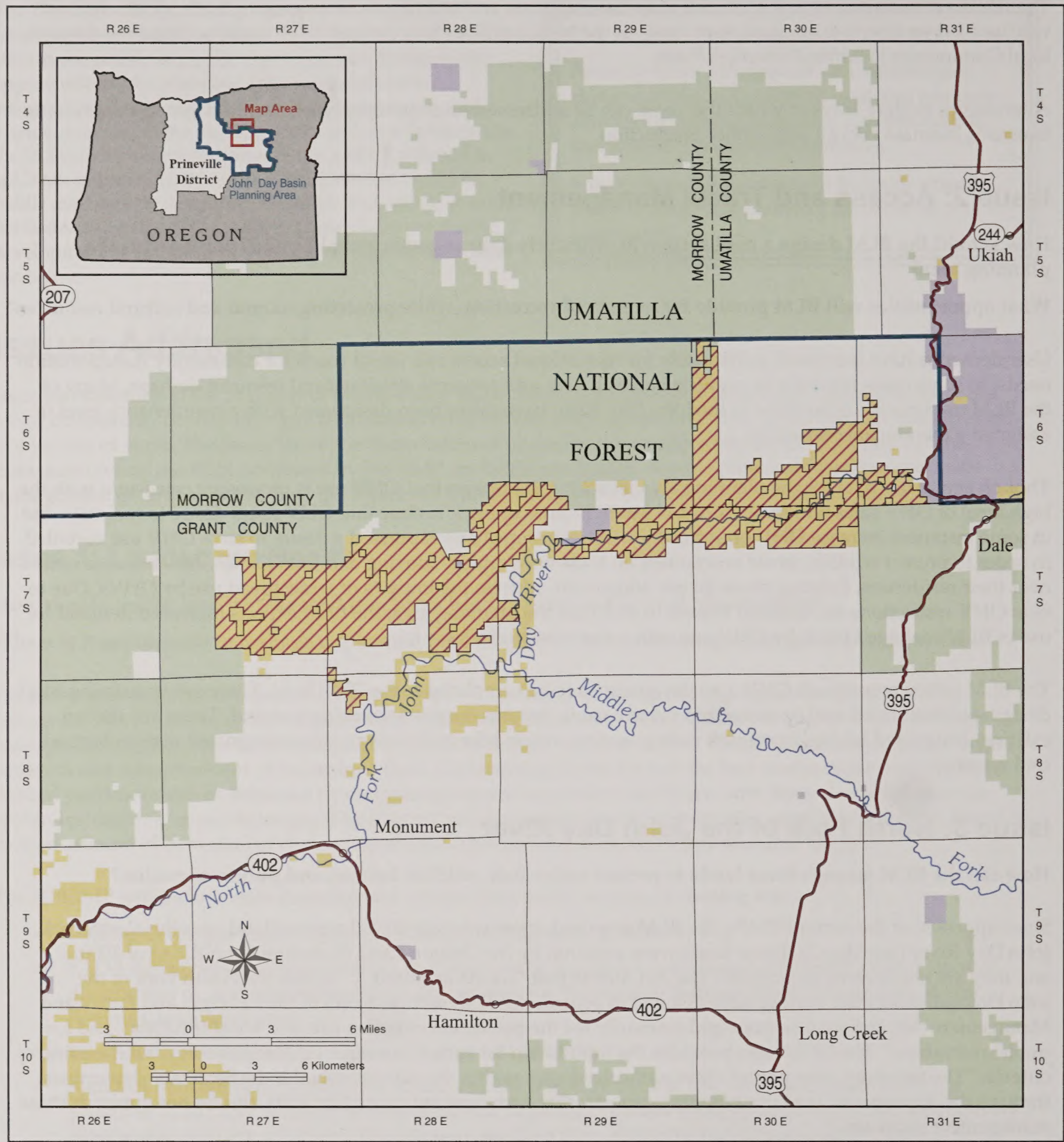
## **Issue 3: North Fork of the John Day River**

**How can the BLM manage these lands to protect native fish, wildlife habitat, and public recreation?**

Since approval of the current RMPs, the BLM acquired approximately 40,000 acres of land near the North Fork John Day River (see Map 2). These lands were acquired by the Oregon Land Exchange Act (OLEA) of 2000, and they are not covered by an RMP. The Act directs that "Lands acquired . . . within the North Fork of the John Day subwatershed shall be administered in accordance with section 205(c) of the Federal Land Policy and Management Act, but shall be managed primarily for the protection of native fish and wildlife habitat, and for public recreation." The OLEA also provides the foundation for future management decisions beyond the primary criteria: "The Secretary may permit other authorized uses within the subwatershed if the Secretary determines, through the appropriate land use planning process, that such uses are consistent with, and do not diminish these management purposes."

As a result of the guidance provided in the OLEA, management direction from the existing RMPs cannot be applied to these acquired lands. Consequently, there is no specific long-term direction for managing resources or resource uses on these lands. On the long list of resources and resource use topics with issues that must be addressed are: landscape health (including vegetation, noxious weeds, wildlife, special status species, post-fire recovery, and fire/fuels management), access and travel management, recreation, Wild and Scenic River status suitability, visual resources, wilderness characteristics, and livestock grazing.





**LEGEND**

- Acquired
- Planning Area Boundary
- Administered Land**
  - Bureau of Land Management
  - Forest Service
  - State
  - Private or Other

U.S. DEPARTMENT OF THE INTERIOR  
Bureau of Land Management



**PRINEVILLE DISTRICT**

**John Day Basin  
Proposed Resource Management Plan  
Final Environmental Impact Statement  
2012**

**Map 2: North Fork John Day Acquired Lands  
Oregon Land Exchange Act 2000**

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.  
M09-07-02:1-12-11



## Management Concerns

There are two types of management concerns:

- Topics raised during scoping that require attention, but which have a lower level of controversy over management than for the key issues identified above. While management concerns are addressed in the RMP, the management related to them generally does not vary by alternative (except in select situations).
- Guidance required by BLM's Land Use Planning Handbook (USDI-BLM 2005). Again when management has not been identified as an issue, guidance generally does not vary by alternative.

## Air Quality

The BLM is obligated under the Clean Air Act to consider potential impacts of the proposed management direction on air quality. Air quality issues include public health impacts from wildland and prescribed fires, and the need to identify area-wide standards that apply to activities authorized by the BLM. These issues were not raised as concerns during scoping.

## Soil

Soil concerns focus on the need to reduce accelerated soil erosion and compaction within the decision area.

## Hydrology and Water Resources

Many streams are lacking the physical processes necessary to properly function and will not reach this condition without active changes in management. Juniper stands in densities and locations beyond the range of historic or acceptable variability have altered hydrologic processes. Some rivers and streams within the planning area have been listed by the Oregon Department of Environmental Quality (ODEQ) as water quality limited (also known as 303[d] streams).

The RMP will identify criteria or thresholds for determining watersheds that may need special emphasis because of human health concerns, aquatic or upland ecosystem health, or public uses.

This plan will incorporate new information to develop an aquatic conservation strategy sufficient to protect anadromous and other native fish in the planning area. New science on disturbance regimes and riparian area management may be incorporated into the standards and guidelines for riparian areas. The mechanisms to achieve desired conditions for fish, water quality, water quantity, stream channels, and floodplains may also be addressed through Best Management Practices.

The existing RMPs did not address water quality limited streams (303[d] streams). The JDBRMP will guide implementation of the Clean Water Act of 1977 to protect and restore water quality, and will support implementation of state-developed water quality measures (such as Total Maximum Daily Loads of sediment).

## Noxious Weeds

Management of noxious weeds and other nonnative invasive species is a critical part of public land management. Noxious weeds are one of the largest threats to maintaining and restoring ecosystem health. They also affect local economies with regard to their detrimental impact on livestock grazing, recreation, timber production, wildlife habitat, and scenery viewing. Noxious weeds displace native plant species and reduce natural biological diversity; degrade soil integrity; alter nutrient cycling; change wildland fire dynamics and energy flow; and interfere with site-recovery mechanisms, such as seed banks, that allow a site to recover following disturbance (Quigley and Arbelbide 1997). The existing plans say little with regard to noxious weed management, but there is ample new guidance that the JDBRMP will incorporate, including the national *BLM Vegetation Treatments Using Herbicides Final Programmatic EIS and Record of Decision* (2007), national *Vegetation Treatment on BLM Lands in Thirteen Western States Final EIS and Record Of Decision* (1991), and the *Prineville District Integrated Weed*



*Management Environmental Assessment* (1993). New state-wide direction (Vegetation Treatments Using Herbicides on BLM Lands in Oregon EIS, October 2010) will update guidance for treatment of noxious weeds.

## **Wild Horses**

The Murderer's Creek Wild Horse Territory/Horse Management Area (HMA) is the only herd management area within the planning area. This plan will set an HMA boundary and herd size that will allow BLM to meet resource needs and protect sensitive resources, such as Wild and Scenic Rivers. The Malheur National Forest has primary planning responsibility for this herd management area.

## **Cultural Resources**

Management concerns include compliance with new laws, guidelines, and directives to ensure that cultural resources and traditional uses are identified and evaluated prior to surface-disturbing activities, and that appropriate mitigation occurs to protect these resources.

## **Paleontology**

The John Day Basin is one of the premiere tertiary fossil mammal and plant areas in the world. Many of the fossil localities are on BLM-managed public lands. There is a need to identify criteria and use restrictions to ensure areas containing these resources are identified and evaluated prior to surface-disturbing activities. There is also a need to make recommendations for developing and promoting the scientific, educational, and recreational uses of fossils.

## **Wilderness Characteristics**

The BLM-managed lands not already identified as Wilderness Study Areas or designated as Wilderness by Congress within the planning area have been assessed for the presence or absence of wilderness characteristics. Where such characteristics have been identified, consideration will be given to protecting them. This review included proposals for new Wilderness Study Areas that have been submitted by the public.

## **Visual Resources**

The existing plans designated Visual Resource Management (VRM) for all public lands except for public lands in the North Fork John Day area. A new VRM Management Class designation of public lands in the North Fork John Day River area is part of this RMP.

## **Special Designations**

The BLM will continue to manage existing designated Wild and Scenic Rivers to protect and enhance their Outstandingly Remarkable Values (ORVs) in accordance with the John Day and Two Rivers RMPs as amended by the John Day River Management Plan (2001). The Wild and Scenic Rivers Act of 1968 required an eligibility and suitability assessment and determination to be conducted as a part of the resource management planning process. The North Fork John Day River between a few miles north of Monument and the confluence of Camas Creek has been determined to be eligible for Wild and Scenic River status. This planning process will determine the suitability of this portion of the North Fork John Day River for National Wild and Scenic River designation. Those river segments determined suitable will be recommended for inclusion into the National Wild and Scenic River System (although final designation would be an Act of Congress), and interim management will be developed.

During the JDBRMP process, the BLM will review the appropriateness of the designation and extent of the existing Horn Butte and Spanish Gulch ACECs, and also consider proposals for new ACECs.



## Cave Resources

The plan will identify basic management needed to protect any caves determined to be significant under the standards in 43 CFR Part 37.

## Livestock Grazing

The existing RMPs made decisions about forage allocation and areas available for livestock grazing based on natural resource conditions. Adjustments to those decisions are made on a site-specific basis for the purpose of meeting goals and objectives. In this plan the BLM explores two approaches to retiring areas from livestock grazing in the event of a grazing preference relinquishment: grazing matrix and grazing decision tree. The grazing matrices measure nine factors across the basin and rank each allotment's potential demand and potential for social and ecological conflict. Three matrix alternatives were based on three sets of criteria. The grazing decision tree provides a step-by-step guide for evaluating a subsequent application for grazing following a preference relinquishment. Other than the need for a procedure to address relinquishment, issues identified with livestock grazing were addressed in the 2001 John Day River Plan; monitoring indicates these planning level issues were addressed sufficiently.

## Lands and Realty

The BLM is required to identify lands that should be retained, disposed, or acquired to serve the national interest. Since the completion of the existing RMPs, significant land tenure adjustments have occurred, including acquisition of Sutton Mountain and the North Fork John Day lands, and disposal of dozens of small parcels. Some current BLM land tenure zoning designations that identify whether BLM lands should be retained or disposed may not reflect new ownership patterns in the planning area. The alternatives also address options for providing rights-of-way for wind energy.

## Minerals and Energy

The BLM Energy Policy recognizes the nation's need for domestic sources of minerals, energy, and other resources. It also recognizes the responsibilities concerning the discovery, development, production, and acquisition of minerals and metals. The RMP alternatives provide management options for leasable, salable, and locatable minerals. Biomass production is addressed in the Landscape Health section, and wind and solar energy are addressed as potential rights-of-way in the Lands and Realty section.

## Issues Considered but not Analyzed Further

During scoping, concerns were raised that are clearly of concern to the public but were beyond the scope of the RMP purpose; inconsistent with existing laws or regulations; or could adequately be resolved under existing law, regulation, or policy. Scoping comments are summarized in the AMS, which is available for review on the planning web page at <http://www.blm.gov/or/districts/prineville/plans/johndayrmp/jdbdocuments.php>. One issue is listed below.

### Management of the Newly Acquired Lands in the North Fork John Day River as Wilderness Study Areas

The BLM no longer has the authority to designate public lands as Wilderness Study Areas; however, the BLM may manage areas to protect wilderness characteristics. The BLM inventoried the acquired lands in the vicinity of the North Fork John Day River for wilderness characteristics, along with contiguous roadless federal lands. The BLM found that all but three of the North Fork wilderness inventory units failed to meet the criteria for naturalness due to signs of past commercial logging activity, including many constructed roads and visible tree stumps. Although BLM's inventory findings concluded that the North Fork lands, since they lack naturalness, do not possess wilderness characteristics, a total of 38,358 acres of acquired BLM lands outside of wilderness study areas within the planning area do contain wilderness characteristics.



# Data Standards

To support planning and implementation decisions, the Prineville District has developed and managed an automated geospatial geographic information system (GIS) database. Extensive collaborative efforts in data collection, data standards, and data acquisition by the Prineville District and BLM Oregon State Office have occurred as a result of the John Day Basin RMP. Existing data was evaluated for accuracy, reliability, and limitations. Missing, incomplete, or outdated information was identified and updated where practical. The result is a significant increase in the amount and accuracy of the geospatial data available for land use planning.

Extensive efforts were made to ensure the accuracy of the data. However, accuracy varies due to the size of the analysis area, spatial resolution of available data, compilation of data from various sources, and the fluid nature of some of the elements that can be mapped. Analysis and summary data presented in this report represent relative, not absolute accuracy. Data used in the analysis of the alternatives was summarized at various scales, including the planning area, Environmental Protection Agency (EPA) ecoregion, fifth field Hydrologic Unit Code (HUC), Travel Management Analysis (TMA) area, and BLM parcel. The quality, quantity, and management of data contained within the GIS database have provided managers and resource professionals with the ability to analyze complex land management issues and scenarios. This information is provided in whole or summary in this document to assist the reader with evaluating the objectives, actions, and outcomes of the RMP.

## How This Document is Organized

This PRMP/FEIS is designed to provide a logical progression of information to the reviewer. The following four chapters and appendices explain the alternatives designed to address the purpose and need (Chapter 2); the current social, biological, and physical environment (Chapter 3); analyses of the anticipated environmental consequences resulting from the implementation of any given alternative (Chapter 4); and public, governmental, and tribal involvement in the planning process (Chapter 5). Appendix T is a summary of public comment on the Draft RMP/EIS and BLM response. Appendix P crosswalks common and scientific names of plant and animal species. A glossary and list of acronyms and abbreviations are also provided to help readers understand technical terms.



## Chapter 2 Alternatives





# Introduction

## Background

The purpose of this report is to provide information on the proposed project and its potential impacts on the environment. The report is organized into several sections, including a description of the project, an assessment of the environmental impacts, and a discussion of the proposed mitigation measures. The information presented in this report is based on the best available data and is intended to provide a clear and concise summary of the project and its potential impacts.

## How This Document is Organized





# How This Chapter Is Organized

This chapter describes five management alternatives for the John Day Basin planning area. Summary tables (Tables 2-23 and 2-24) at the end of this chapter display the range of outcomes and environmental consequences (effects) for the alternatives across the key resources and resource uses managed by the BLM in the planning area.

In the following description of alternatives:

- “Management Common to All Alternatives” includes management from the three existing plans (John Day RMP, Two Rivers RMP, and Baker RMP) that would be carried forward regardless of which alternative is chosen and implemented. This guidance provides management direction that has been successful, did not raise concerns during scoping, and does not need adjustment.
- Alternative 1 (No Action Alternative) combines existing management guidance from the three existing plans (John Day RMP, Two Rivers RMP, and Baker RMP). If Alternative 2 (PRMP), 3, 4, or 5 is chosen and implemented, the guidance described under Alternative 1 would not be carried forward.
- “Management Common to All Action Alternatives” describes new management objectives, actions, and guidelines that are common to Alternatives 2 (PRMP), 3, 4, and 5. This guidance addresses management that can be resolved with a single action alternative.
- Alternatives 2 (PRMP), 3, 4, and 5 (Action Alternatives) address some issues that can be resolved in a variety of ways.
- Based on the analyses in this final environmental impact statement, the BLM identified Alternative 2 as the preferred alternative (Proposed Resource Management Plan, or PRMP). The preferred alternative is the one that best meets the purpose and need described in Chapter 1.

To provide an overview of the Proposed Resource Management Plan, all components of the plan are presented before the other alternatives. Consequently, Management Common to All Alternatives and Management Common to All Action Alternatives (including Alternative 2) are presented consecutively. Then, the guidance unique to Alternative 1 (No Action) and to Alternatives 3, 4, and 5 is presented.

Each management alternative is described below by objectives, actions, and in some cases guidelines and Best Management Practices (Appendix B) for key resources or resource uses. In many instances, examples are also provided for clarification purposes, but should not be considered as all inclusive.

*Objectives* are desired outcomes and management requirements for resources or resource uses. They represent land use plan decisions.

*Actions* are also required land use plan decisions, and aim to achieve the objectives of a particular resource or resource use. They include actions to maintain, restore, or improve land health. These actions include proactive measures (e.g., measures that would be taken to enhance watershed function and condition), as well as measures or criteria that will be applied to guide day-to-day activities occurring on public lands. Actions also establish administrative designations such as ACECs, recommend proposed withdrawals, establish land tenure zones, and determine suitability for congressional designations (such as Wild and Scenic Rivers). Actions include expected future activities for allowable uses such as mineral leasing, recreation, timber harvest, and livestock grazing. Identifying these actions enables analysis of the effects among the various alternatives.

*Guidelines* are recommendations or rules that lead or direct a course of action to achieve objectives. Rationale for deviating from any guidelines are documented in subsequent decisions.

*Best Management Practices* (BMPs) are a suite of techniques that guide, or may be applied to, management actions to aid in achieving desired outcomes. Best Management Practices are often developed in conjunction with land use plans, but are not considered a land use plan decision unless the plan specifies they are mandatory. They may be updated or modified without a plan amendment if they are not mandatory. The Best Management Practices can be applied and monitored using adaptive management techniques. Similar to guidelines, rationale must be documented for deviating from applicable BMPs during implementation.



Application of Best Management Practices is required; however, it is not intended that all of the BMPs listed will be applied for any specific management action. The overall goal is not to adhere strictly to a particular set of BMPs, but to meet RMP objectives when implementing management actions. The correlation of BMPs to pertinent RMP objectives is provided in Appendix B. An Interdisciplinary (ID) team of resource specialists relevant to the issues and resource concerns will review all BMPs associated with the proposed activity type. The application of applicable BMP(s) becomes the BMP design. The ID Team will provide rationale for the BMP design.

Correlation of BMPs to RMP objectives is designed to ensure attainment of RMP objectives. Specialists exercise discretion as to what will work best in a particular situation. An example is the need to respond to a wide range of geology, landform, soils, watershed characteristics and climate. Although Appendix B does not provide an exhaustive list of BMPs, the included BMPs are believed to cover most project activity situations in the planning area. Additional BMPs may be identified during the interdisciplinary process when evaluating site-specific management actions. Where found to be ineffective, BMPs may require modification to meet the correlated RMP objectives. During BMP design, specialists may consider baseline environmental conditions; type of activity; proximity to water; disturbance level; direct, indirect and cumulative effects; and timing. They may also evaluate new technology and relevant implementation or effectiveness monitoring data, published studies, or other sources of information.

Management objectives, actions, guidelines, and Best Management Practices set the stage for site-specific resource use levels. Site-specific use levels are normally identified during implementation-level planning or the permit authorization process.

The BLM considered the overall planning vision and goals described in Chapter 1 in developing alternative objectives, actions, guidelines, and Best Management Practices. The following alternatives seek to balance resource protection with the use of natural resources. In eastern Oregon, the land has always provided the economic base for communities. The following alternatives seek to identify ways in which communities can continue to benefit from, protect, use, and enjoy public lands within the John Day Basin planning area. If any discrepancies are encountered between the text and maps in this Proposed RMP/FEIS, the text should be considered accurate.

## **Summary of Major Changes Between the Draft and Final EIS/RMP**

Changes to the alternatives were based on input from public comments, cooperators, and the John Day/Snake Resource Advisory Council. Acreage designation changes are summarized in Table 2-23, at the end of this chapter. Yellow highlights indicate corrections made based on inaccuracies in the Draft EIS. Pink highlights indicate acreage changes based on alternative adjustments from the Draft EIS to the Final EIS. The following is a summary of the major changes and is provided as an overview; if there are differences between this summary and the description of alternatives, the alternative descriptions contain the most accurate portrayal of proposed actions.

### **Management Common to All Alternatives**

#### **Special Designations**

- Wilderness: Included an interim wilderness management plan for legislated Spring Basin Wilderness to provide management direction until a final wilderness management plan can be written with public input.

#### **Livestock Grazing**

- A need was identified for a process to help grazing lessees understand the grazing lease relinquishment process and their lease options. Relinquishment procedures, consistent with current policy and direction, were developed to describe the process for lease relinquishment.



## Management Common to All Action Alternatives

### Vegetation

- Criteria for large diameter trees was changed from 20 inches dbh, to wording that defers the definition of "large" to the Biophysical Setting (BpS) the treatment is within.

### Livestock Grazing

- Removed the "Close Now" allotment category to allow site specific evaluation of resource conditions prior to allotment closures.
- Included Reserve Forage as an option available to the manager for all Open allotments.

### Land Tenure

- Lands in the Spanish Gulch area were misclassified as Z-1 and have been adjusted to Z-2 consistent with zoning criteria.

### Recreation (Off-Highway Vehicle Use)

- Changed allowances for off-route use of motorized vehicle to camp, park, or turn-around from 100 feet off roads in all areas in the Draft, to only 50 feet off a road in Wild and Scenic Rivers and Wilderness Study Areas, no off route use in Wilderness, and 100 feet everywhere else in the Final. Clarified direction that off-route use for the above reasons shall not create ruts or be allowed through live water.
- Changed Sutton Mountain WSA from a Limited OHV designation to a Closed OHV designation to be consistent with all other WSAs in the plan area.
- Clarification was added regarding OHV designations and interim routes. The Draft indicated that many of the WSAs would remain limited; however, it was not clear if the use of this term applied to an OHV designation or an amount of routes. The language was clarified by noting the specific OHV designation if an area were to be released from wilderness study area designation.

### Travel Management

- Roads listed as hydrological closures have been reclassified as hydrological concerns. Site specific project designs are needed to determine appropriate methods to address the hydrologic concerns.
- Errata routes - Rudio Mountain: additions and subtractions identified on the planning web site shortly after the release of the Draft have been incorporated into the alternatives as displayed on the Errata Maps.
- Direction was added to define allowable travel management actions that can occur prior to a final transportation plan being completed.



## Alternative 1 (No Action)

All changes were associated with map corrections.

### Visual Resources

- Corrected existing VRM around Sutton Mountain to VRM 2.

### Recreation (Off-Highway Vehicle Use)

- The Gable Creek area southwest of Mitchell was inadvertently shown as having an Open OHV designation. This was changed to the correct designation of Limited.

## Alternative 2

### Recreation (Off-Highway Vehicle Use)

- Identified a new boundary for the Rudio Mountain OHV area based on the slope, sensitive soils, and riparian areas. Changes in the number of acres to OHV designations, as follows: 519 fewer acres in the Open category; 53,632 fewer acres in the Limited category; and 53,909 increased acres in the Closed category (majority are Limited acres reclassified as Closed in Sutton Mountain WSA).
- The two WSAs incorrectly portrayed as Limited were changed to Closed.
- Little Canyon Mountain:
  - Changed hours of use from '9 a.m. until 6 p.m.' to '9 a.m. until dusk' in the North and South pits and all designated OHV routes and changed the allowable decibel level from 99 to 96.
  - Clarified language about creation of trails to limit noise disturbance to residents.
  - Within three years of signing of the John Day Basin RMP Record of Decision, the BLM will review the actions and guidelines for OHV use in the Little Canyon Mountain areas with input from interest groups to see if objectives are being met, and if necessary, develop mitigation measures and triggers.
  - Criteria for designating 'No shooting' zones was added. This would result in a 'No shooting' zone at Little Canyon Mountain (Special Recreation Management Area) unless legally hunting.
- Clarification was added that should triggers be reached in the Rudio "Open" designation, interim route designations would be consistent with those identified for Alternatives 4 and 5.

### Livestock Grazing

- Replace the grazing matrix with a grazing decision tree. If a grazing preference is voluntarily relinquished, the preference for all or a portion of an allotment would remain available to a qualified applicant who can legally access the allotment and the following conditions are met: livestock access can be eliminated from campsites within Wild and Scenic River Segments 1, 2, or 3; occupied habitat of a species federally listed as threatened or endangered or of a species proposed for federal listing (for which a biological evaluation has not determined livestock grazing has 'no effect'); and the allotment has not failed Land Health Standards and Guidelines due to current livestock management.
- In the event that base property is owned or managed by a tribal, federal state, or local government agency with land use objectives that do not depend on continued livestock grazing, grazing preference relinquishment would lead to the allocation of all or a portion of those acres in the lease to other resource uses.
- Changed North Fork allotments to allow for allotment boundary changes on four allotments to facilitate use of surrounding lands. This would result in small amounts of acquired lands being included in active grazing allotments.



## Land Tenure

- Identified the Spring Basin legislated land exchange pieces as Zone 2, rather than Zone 1, to facilitate the land exchange as directed by the Omnibus Public Land Management Act of 2009 (H.R. 146).

## Lands with Wilderness Characteristics

- Based on updated inventory results, an additional 7,513 acres of lands with wilderness characteristics (LWC) are proposed for management to protect wilderness characteristics, for a total of 19,442 acres. About 40 percent of this total acreage has been identified as needing vegetative treatment and would receive a mechanical vegetation treatment designed to meet ecological needs and long-term wilderness character.

## Public Health and Safety

- Close the Little Canyon Mountain Special Recreation Management Area and John Day Wild and Scenic River corridor to the discharge of a firearm unless legally hunting, and added criteria for potential future closures.

## Travel Management

- Prescribed road density for the following areas in the North Fork travel management block:
  - North side of the river and all additional scattered pieces: 2 miles per square mile.
  - South side of the river: 1.1 mile per square mile (to allow creation of a non-motorized trail along the south side).
  - River corridor: 1.5 miles per square mile.
  - Areas managed to protect wilderness characteristics: 0 miles per square mile.
  - This results in an average road density prescription of 1.77 miles per square mile.
- Identified interim route designations (same as Alternative 5) should triggers be met in the Rudio Open area and the designation changes to Limited.

## Alternative 3

### Lands with Wilderness Characteristics

- Same as the PRMP (Alternative 2).

## Alternative 4

### Lands with Wilderness Characteristics

- Based on updated inventory results, an additional 20,301 acres of LWC were identified, for a total of 35,457 acres with wilderness characteristics. All 35,457 acres would be afforded the full range of protections for wilderness characteristics.

## Travel Management

- Same as in the PRMP (Alternative 2) with the following exceptions:
  - It was discovered that one route on Rudio Mountain was mistakenly included when it did not meet the management criteria and was thus removed.
  - Seasonal closure dates associated with the Murderer's Creek Cooperative Travel Management Area were adjusted to include bow hunting seasons.
  - Prescribed Road Density limits were adjusted for areas managed to protect wilderness characteristics. The connecting road between Franks Creek and Holmes Creek roads would not be constructed due to the protection of wilderness characteristics.



## **Recreation (Off-Highway Vehicle Use)**

- Areas managed to protect wilderness characteristics would be closed to OHV use.

## **Alternative 5**

### **Lands with Wilderness Characteristics**

- Same as the PRMP (Alternative 2).

### **Livestock Grazing**

- Retained the grazing matrix as described in Alternative 2 in the Draft RMP/EIS.

## **Recreation (Off-Highway Vehicle Use)**

- Clarified wording to match the intent of having no OHV use in Little Canyon Mountain.

## **Travel Management**

- All BLM-administered roads on Little Canyon Mountain were changed to no longer allow public use. This does not include the State Highway, County road, or Forest Service trailhead access road.
- It was discovered that one route on Rudio Mountain was mistakenly included when it did not meet the management criteria and was thus removed.

# **Planning for BLM Land Management in the John Day Basin**

In accordance with the National Environmental Policy Act (NEPA), this chapter describes a range of alternatives for managing resources and activities on BLM-managed lands in the John Day Basin. These alternatives aim to: (1) resolve the significant issues described in Chapter 1; (2) meet the purpose and need; and (3) provide required guidance for BLM programs in the John Day Basin.

Significant issues are problems identified by the BLM; the public; and other federal, tribal, state, and local agencies during the scoping process that cannot be resolved by following existing guidance. Alternative management approaches address significant issues while maintaining consistency with planning authorities. Existing management that is successful would be carried forward.

The Bureau of Land Management lands in the John Day River Basin are currently managed under three Resource Management Plans: The Two Rivers (1986), which addresses management in the western portion of the planning area; the John Day (1985), which addresses management in most of the eastern portion of the planning area; and the Baker (1989), which addresses management of small portions of Morrow and Umatilla Counties.

The BLM land management is guided not only by resource management plans, but also by other mandates (for example, BLM statute, regulation, or legislative acts). These management mandates are used in the development of the RMP; however, modifying these mandates is outside the decision space for this RMP. Management mandates are described briefly in Appendix A.

This chapter describes five alternative management approaches. Alternative 1 is the “No Action” Alternative, which continues existing management; Alternative 2 (Proposed Resource Management Plan, or PRMP); and



Alternatives 3, 4 and 5 are the “Action” alternatives, which represent different approaches to resolve planning issues. Alternatives provide one or more different:

- Degrees of protection for each resource and use.
- Approaches to management for each resource and use.
- Mixes of allowable, conditional, and prohibited uses in various geographic areas.
- Levels and methods for restoration.

To develop criteria for the alternatives, the BLM queried the public during a round of public meetings (see Chapter 1 for more information). A predominant viewpoint expressed in this public outreach is that there is a need for more regional employment opportunities and economic development. Residents and visitors alike also seek expanded recreational opportunities, although the desired opportunities vary. Some are primarily interested in using public land resources whereas others are primarily concerned with protecting and preserving those same resources.

As a resource management agency, the BLM has a two-fold mission: (1) to provide for resource uses, and (2) to ensure that resources will be available for future generations. Given the conditions described in Chapter 3 (Affected Environment), the long-term focus of this plan is to ensure opportunities for recreation and to ensure future availability of resources. A short-term focus is to seek opportunities to create economic value for local communities while protecting other resources as the BLM manages lands for the future.

## Comparison of Alternatives

Table 2-1 summarizes key differences among alternatives by resource or resource use. Objectives that are similar across all alternatives for a particular resource are not necessarily displayed in this table. Following this table is a detailed description of each alternative by resource or resource use. Table 2-23 compares acreage allocations by alternative.



Table 2-1. Comparison of Alternatives

Resource	Alternative 1 – No Action	Alternative 2 – Proposed RMP	Alternative 3	Alternative 4	Alternative 5
<b>Soils</b>	Maintain soil productivity and minimize erosion.				
	There are no soils objectives unique to Alternative 1.	Maintain and promote, or restore long-term, sustainable soil health and proper functioning condition.			
<b>Vegetation</b>	In rangelands, manage vegetation to achieve greater amounts of mid or late seral conditions. Manage most forestlands to produce timber.	Return community composition to within the Acceptable Range of Variability (ARV) for all Biophysical Settings (BpS) on BLM lands. Maintain native bunch grass and biological soil crust integrity. Provide commercial and noncommercial products when compatible with plan resource objectives, and as a result of managing for healthy forest systems. Provide sufficient forage for livestock and wildlife.			
<b>Fuels</b>	Provide for firefighter and public safety from the effects of wildland fire. Restore and maintain the integrity of ecosystems.				
	There are no fuels objectives unique to Alternative 1.	Wildland urban interfaces would be managed to support safe and successful suppression efforts under hot, dry summer weather conditions. Outside of WUI manage vegetation fuels to: a) trend to Fire Regime Condition Class 1; and b) be within the Acceptable Range of Variability by Biophysical Setting.			
<b>Fire</b>	Suppress all unplanned ignitions while providing for the safety of the public and fire personnel.	In the Wildland Urban Interface Suppression zone, suppress wildfire to protect life, property, and identified resources when wildfire occurs due to high risk. During wildfire suppression efforts, retain unburned patches of habitat that do not compromise safety or fire suppression efforts.  In the Appropriate Response zone, implement appropriate management actions based on assessment of risk to life, property, and key ecological components upon discovery of a wildfire. During wildfire suppression efforts retain unburned patches of habitat that do not compromise safety or fire suppression. Unplanned fires may be managed to achieve RMP objectives for vegetation, wildlife habitat, and air quality once implementation direction is included in the applicable fire management plan. This direction will describe the criteria to be used to decide whether managing an unplanned, naturally ignited fire to meet resource management objectives is appropriate given the conditions that prevail at the time of the fire and preliminary actions that may be taken.			



Table 2-1. Comparison of Alternatives

Resource	Alternative 1 – No Action	Alternative 2 – Proposed RMP	Alternative 3	Alternative 4	Alternative 5
Aquatics	Manage lands adjacent to major river corridors to meet state water quality requirements, satisfy obligations of the Clean Water Act, and protect and enhance Outstandingly Remarkable Values, especially anadromous salmonids. Comply with water quality criteria specifically listed by Oregon Department of Environmental Quality.				
	Manage Riparian Habitat Conservation Areas (RHCAs) to meet PACFISH goals of limiting loss of fish habitat by restricting consumptive uses.	Implement an Aquatic Conservation Strategy to: maintain and restore the health of watersheds and aquatic ecosystems, move streams and lentic areas (see glossary) toward Properly Functioning Condition (see glossary), conserve and restore water quality to provide for beneficial uses, meet state policy, conserve and restore stream and wetland integrity and domestic water supplies, and monitor and maintain water rights necessary to meet BLM objectives and maintain beneficial use.			
Wildlife	Improve and maintain vegetative conditions to benefit wildlife and livestock.	Maintain or improve habitats to support healthy, productive and diverse populations and communities of native plants and animals. Provide security habitat that benefits deer, elk, antelope, and bighorn sheep during sensitive periods (winter, calving/fawning and hunting seasons). Maintain, restore, and enhance bighorn sheep populations and habitat on public land. Protect and restore special habitat features. Consider returning extirpated species to the plan area.			
Lands with Wilderness Characteristics	Lands with wilderness characteristics outside of WSAs do not receive protection designed to maintain or enhance the identified wilderness characteristics.	Protect wilderness characteristics on 19,442 acres of BLM lands by prohibiting certain uses and management actions in these areas. Mechanical vegetation treatment consistent with VRM Class II objectives would be allowed on approximately 40% of these acres for the purpose of maintaining or restoring ecological condition and protecting long term wilderness characteristics.	Same as the PRMP (Alternative 2).	Protect wilderness characteristics on all BLM lands (35,457 acres) with wilderness characteristics by prohibiting certain uses and management actions in these areas. Substantive mechanical vegetation treatment would not be allowed.	Same as the PRMP (Alternative 2).



Table 2-1. Comparison of Alternatives

Resource	Alternative 1 – No Action	Alternative 2 – Proposed RMP	Alternative 3	Alternative 4	Alternative 5
<b>Visual Resources</b>	Acquired lands in the N. Fork John Day River have no formal VRM designation but would be managed consistent with surrounding areas - VRM III.	The North Fork John Day River corridor; the proposed North Fork John Day, Armstrong Canyon, and Ferry Canyon ACECs; most of JV Ranch; and areas managed to protect wilderness characteristics would be VRM Class II. All other lands are managed consistent with visual resource inventory results.			
<b>Wild and Scenic Rivers</b> (Segment of the North Fork John Day River determined eligible for inclusion in the WSR system)	Manage consistent with a tentative Recreation classification from Camas Creek to Mallory Creek, and a tentative Scenic classification from Mallory Creek to river mile 20.4.  Provide interim protection of the scenic, recreation and fishery Outstandingly Remarkable Values (ORVs) without a final determination of suitability.	Recommend the North Fork John Day River as administratively suitable for designation by Congress as WSR, with a Scenic classification, and ORVs of fishery, scenery, and recreation.	Recommend the North Fork John Day River as administratively suitable for designation by Congress as WSR. Classify as Scenic and Recreational with ORVs of fishery, scenery, and recreation.	No eligible rivers would be recommended as suitable for designation by Congress as WSR. Manage unsuitable river segments in accordance with other RMP management objectives.	Same as the PRMP (Alternative 2).
<b>Areas of Critical Environmental Concern</b>	Continue to designate the Spanish Gulch (333 acres) and Horn Butte (5,999 acres) ACECs.	Expand the Horn Butte ACEC to 7,152 acres, and remove ACEC status from Spanish Gulch. Designate the Armstrong Canyon (3,885 acres), Black Canyon ACEC/RNA (6,639 acres), and Ferry Canyon (2,364 acres), and John Day Paleontology (38,168 acres) ACECs. The Lower John Day (42,682 acres) ACEC would be designated contingent on WSA release (see ACEC contingencies below in Wilderness and WSAs).			



Table 2-1. Comparison of Alternatives

Resource	Alternative 1 – No Action	Alternative 2 – Proposed RMP	Alternative 3	Alternative 4	Alternative 5
Wilderness	Preserve the wilderness values of existing Wilderness Study Areas (WSAs) for possible Wilderness designation by Congress and Spring Basin Wilderness.				
	There are no wilderness objectives unique to Alternative 1.	<p>Manage Spring Basin Wilderness consistent with interim wilderness management direction provided in Appendix U of this document.</p> <p>In the event that a Wilderness Study Area is released by Congress for other uses, the BLM would allocate these released lands as follows:</p> <ul style="list-style-type: none"><li>• North Pole Ridge, Thirtymile, and Lower John Day WSAs would be designated the Lower John Day ACEC for visual quality, and managed under an OHV Limited designation.</li><li>• Pat’s Cabin WSA would be managed under no surface occupancy requirements for fluid mineral development, closed to wind energy development, and an OHV Limited designation.</li><li>• Sutton Mountain WSA would be managed under the direction for the John Day Paleontology ACEC where it overlaps the Sutton Mountain WSA and Black Canyon RNA. Remaining lands would be managed under no surface occupancy requirements for fluid mineral development, closed to wind energy development, and an OHV Limited designation.</li><li>• Aldrich Mountain WSA would be managed under no-surface-occupancy requirements for fluid mineral development, closed to wind energy development, and OHV Limited Designation.</li><li>• Strawberry Mountain WSA would be managed under an OHV Closed designation.</li><li>• VRM Class for released WSAs would be changed from VRM Class I to VRM Class II.</li></ul>			
Back Country Byways	Continue to manage the South Fork John Day River Back Country Byway, a 50-mile byway paralleling the South Fork of the John Day River. Maintain the road surface suitable for passenger vehicles during spring, summer, and fall seasons.				
	There are no byway objectives unique to Alternative 1.	Designate approximately 41 miles of federal, state, and county routes that circle the Sutton Mountain WSA as a BLM Back Country Byway or recommend the state identify as a State Scenic Byway. Provide roadside viewing opportunities along the designated route.			



Table 2-1. Comparison of Alternatives

Resource	Alternative 1 – No Action	Alternative 2 – Proposed RMP	Alternative 3	Alternative 4	Alternative 5
Livestock Grazing	Modify grazing system, season of use, stocking density, class or type of livestock, or activity plans, or modify or install new range developments to meet the Standards for Land Health and Guidelines for Livestock Grazing Management for Public Lands Administered by the BLM in the States of Oregon and Washington.				
	Allow livestock grazing as shown for Alternative 1 in Appendix J. Do not authorize grazing on the nine allotments in the North Fork John Day which are predominantly acquired lands.	Following voluntary relinquishment of grazing preference, allow closure of all or portions of grazing allotments using a "Grazing Decision Tree" (described in the Livestock Grazing section). The BLM retains the authority and discretion to close allotments as necessary to address non-attainment of Land Health Standards and Guidelines or other resource objectives.	Following voluntary relinquishment of grazing preference, allow closure of all or portions of grazing allotments using a Grazing Matrix (described in this chapter in Management Common to Alternatives 3, 4, and 5).		
		In the North Fork acquired lands, portions of the Boneyard and Scaffold Creek allotments would be available for use on a temporary non-renewable basis.	Assumes North Fork John Day River acquired lands have currently occupied anadromous fish streams, and grazing would be excluded from riparian buffers.	Applies a greater degree of sensitivity to potential social and ecological conflict.	North Fork John Day River acquired lands would be treated as a "Special Management Area."



Table 2-1. Comparison of Alternatives

Resource	Alternative 1 – No Action	Alternative 2 – Proposed RMP	Alternative 3	Alternative 4	Alternative 5
Recreation Opportunities	Designated WSR segments would remain a Special Recreation Management Area (SRMA; see glossary). The only identified Extensive Recreation Management Area is the North Fork area managed under the Baker RMP.	Expand the boundary of the John Day SRMA to 123,775 acres. Designate the North Fork/JV Ranch SRMA (51,566 acres), Bridge Creek SRMA (60,956 acres), and Little Canyon Mountain SRMA (2,617 acres). Separate the South Fork John Day River from the John Day SRMA and create a new 55,204-acre SRMA, Rudio Mountain/Johnson Heights ERMA (59,247 acres). Designate the John Day Basin ERMA for the remaining 100,487 acres in the planning area. Protect existing recreation values and provide access to public lands. Enhance recreation management through acquisition of lands or public access easements.			
	No new special recreation permits on BLM public lands would be considered for authorization except for select, specified cases.	Issue new upland-based special recreation permits according to BLM policy.			
	Acres of OHV designations: Open: 234,272 Limited: 155,228 Closed: 67,332	Acres of OHV designations: Open: 3,971 Limited: 313,668 Closed: 138,732	Acres of OHV designations: Open: 4,571 Limited: 313,067 Closed: 138,732	Acres of OHV designations: Open: 2 Limited: 301,043 Closed: 155,325	Acres of OHV designations: Open: 0 Limited: 315,020 Closed: 141,350



Table 2-1. Comparison of Alternatives

Resource	Alternative 1 – No Action	Alternative 2 – Proposed RMP	Alternative 3	Alternative 4	Alternative 5
Travel Management	<p>Manage an interim transportation system of 742 total miles of routes (BLM and State, County, and other Agency routes across BLM lands), including:</p> <ul style="list-style-type: none"> <li>• 572 miles of BLM routes open year-round.</li> <li>• 61 miles of BLM routes open seasonally.</li> <li>• 250 miles of BLM routes that are currently “landlocked” and inaccessible to the public unless permission for access is acquired from private landowners.</li> <li>• 475 miles of unmaintained primitive routes that are accessible to high clearance or off-road vehicles are open for public use.</li> </ul>	<p>The planning area is divided into six travel management subareas. Manage an interim transportation system of 333 total miles, including:</p> <ul style="list-style-type: none"> <li>• 86 BLM miles open year around.</li> <li>• 138 miles open seasonally.</li> <li>• 9 miles of BLM routes that are currently “landlocked” and inaccessible to the public.</li> </ul> <p>109 miles not under BLM jurisdiction (with limited BLM management discretion).</p> <p>409 miles are not part of the interim transportation system. (Of the 409 miles, 241 miles are landlocked and inaccessible; and 168 miles are duplicate, short, or ill defined.)</p>	<p>The planning area is divided into six travel management subareas. Manage an interim transportation system of 879 total miles, including:</p> <ul style="list-style-type: none"> <li>• 295 BLM miles open year round.</li> <li>• 475 miles open seasonally.</li> <li>• 250 miles of BLM routes that are currently “landlocked” and inaccessible to the public.</li> </ul> <p>109 miles not under BLM jurisdiction (with limited BLM management discretion).</p> <p>662 miles of primitive routes usable by high clearance or off-road vehicles are open to the public.</p>	<p>Same as the PRMP (Alternative 2) with the exception of a few routes in the Rudio Mountain area.</p>	<p>Same as the PRMP (Alternative 2) with the exception of the Little Canyon Mountain area where approximately 7 miles of routes would have only administrative access.</p>
	Maintain the existing transportation system.	Assess present and future access needs. Evaluate existing trails, primitive roads, and roads. Use plan criteria to determine an appropriate travel and transportation system after completion of the RMP.			



Table 2-1. Comparison of Alternatives

Resource	Alternative 1 – No Action	Alternative 2 – Proposed RMP	Alternative 3	Alternative 4	Alternative 5
Energy and Mineral Resources	Within legal constraints, and except as otherwise noted in the alternatives, all federal mineral estate locatable, leasable, and salable minerals would be available for exploration, development, and production subject to existing regulations and standard requirements and stipulations. Provide leasing opportunity for oil and gas, geothermal energy, and solid minerals in an environmentally sound manner. Provide opportunity for the exploration, location, development, and production of locatable minerals in an environmentally sound manner. Eliminate and rehabilitate abandoned mine hazards (locatable minerals). Table 2-14 summarizes the range of alternatives for mineral exclusion and avoidance areas.				
	There are no minerals objectives unique to Alternative 1.	In an environmentally sound manner, create a recreational mining area where the public can pan for gold with a reasonable prospect of success.			
Lands and Realty	In John Day and Two Rivers RMP areas, retain Z-1 lands in public ownership; retain or exchange Z-2 lands; and retain or dispose of Z-3 lands through sale or exchange.				
	Identify 222,172 acres as Z-1; 194,222 acres as Z-2; 40,385 acres as Z-3; and acquire about 4,036 acres. In the Baker RMP area, retain in public ownership Z-1 lands within WSR boundaries, Wilderness areas, WSAs, areas where wilderness characteristics are protected, ACECs, and RNAs. Lands zoned Z-2 in the Baker RMP area would be available for disposal. In the remainder of the Baker RMP area, no land sales would be permitted unless disposal of the tract would serve an important public objective. Transfers to other federal, state or local agencies may take place or exchanges may occur to enhance resource management or improve public service. See Map 15.	Increase the percentage of public land with public access by 10% over the life of the plan. Identify 354,887 acres (Z-1), 33,253 acres (Z-2), and 68,192 acres (Z-3). See Map 16. Within the planning area, the area formerly under the Baker RMP would be managed under the three-zone Land Tenure Classification system used under the John Day and Two Rivers RMPs. 888,405 acres of private lands adjacent to large blocks of public lands would be identified as potentially suitable for acquisition. Actual acquisitions limited to not more than 2% of the planning area.			



Table 2-1. Comparison of Alternatives

Resource	Alternative 1 – No Action	Alternative 2 – Proposed RMP	Alternative 3	Alternative 4	Alternative 5
<b>Agricultural Land Management</b>	Apply water to 120 acres of land associated with agricultural leases. When conflict occurs, resource values on public lands would be protected. The remaining agricultural lands are on scattered pieces of land throughout the plan area.	<p>Agricultural lands provide local agriculture, riparian habitat, wildlife, pollution abatement, and public access to recreation.</p> <ul style="list-style-type: none"> <li>• Maintain 0 to 400 acres in a combination of wildlife food/cover crops and potentially irrigated land in crop production by local farmers and ranchers (up to 100 acres within the WSR; 60 of which can be irrigated at any one time).</li> <li>• Restore and maintain 100+ acres of habitat for species found in rivers, floodplains or surrounding landscape through permanent conversion.</li> <li>• Maintain all unused agricultural land water rights (100+ acres) in instream leases to achieve instream flow goals for fish, pollution abatement and recreation.</li> <li>• Dispose of existing small (&lt;10 acres) parcels of agricultural fields where it is not possible for BLM to manage separately from privately owned agricultural fields and are not publicly accessible by river, road or foot.</li> </ul>			



# Description of Alternatives

The five alternatives are described individually below by proposed management actions for key resources or resource uses. The management actions include objectives, actions, and in some cases, also guidelines. Management actions may be common to all alternatives, common to all action alternatives (2-5), or specific to an individual alternative.

## Proposed Resource Management Plan (PRMP) (Alternative 2)

### Soils

#### Management Common to All Alternatives

##### *Objective S1*

Maintain soil productivity.

##### *Actions*

- For construction of all management facilities and for vegetation manipulations, surface disturbance would be held to a minimum. Disturbed soil would be rehabilitated to blend with surrounding soil surface and would be revegetated as needed to replace ground cover and to reduce soil loss from wind and water erosion.
- Take corrective actions, where practicable, to resolve erosive conditions.

##### *Guidelines*

- Do not use clear-cutting where soil slope or other watershed conditions are fragile and subject to damage (sensitive soils).
- Surface disturbance at all project sites would be held to a minimum.
- Vegetation management systems that have the least disturbance of the soil surface are preferred. Minimize compaction within the disturbed area.
- Tractor skidding would be avoided on slopes greater than 35%.
- Landings would be the minimum size commensurate with safety and equipment requirements and located on stable areas. Avoid locating landings on steep hill areas or areas that require excessive fill or excavation.

#### Management Common to All Action Alternatives

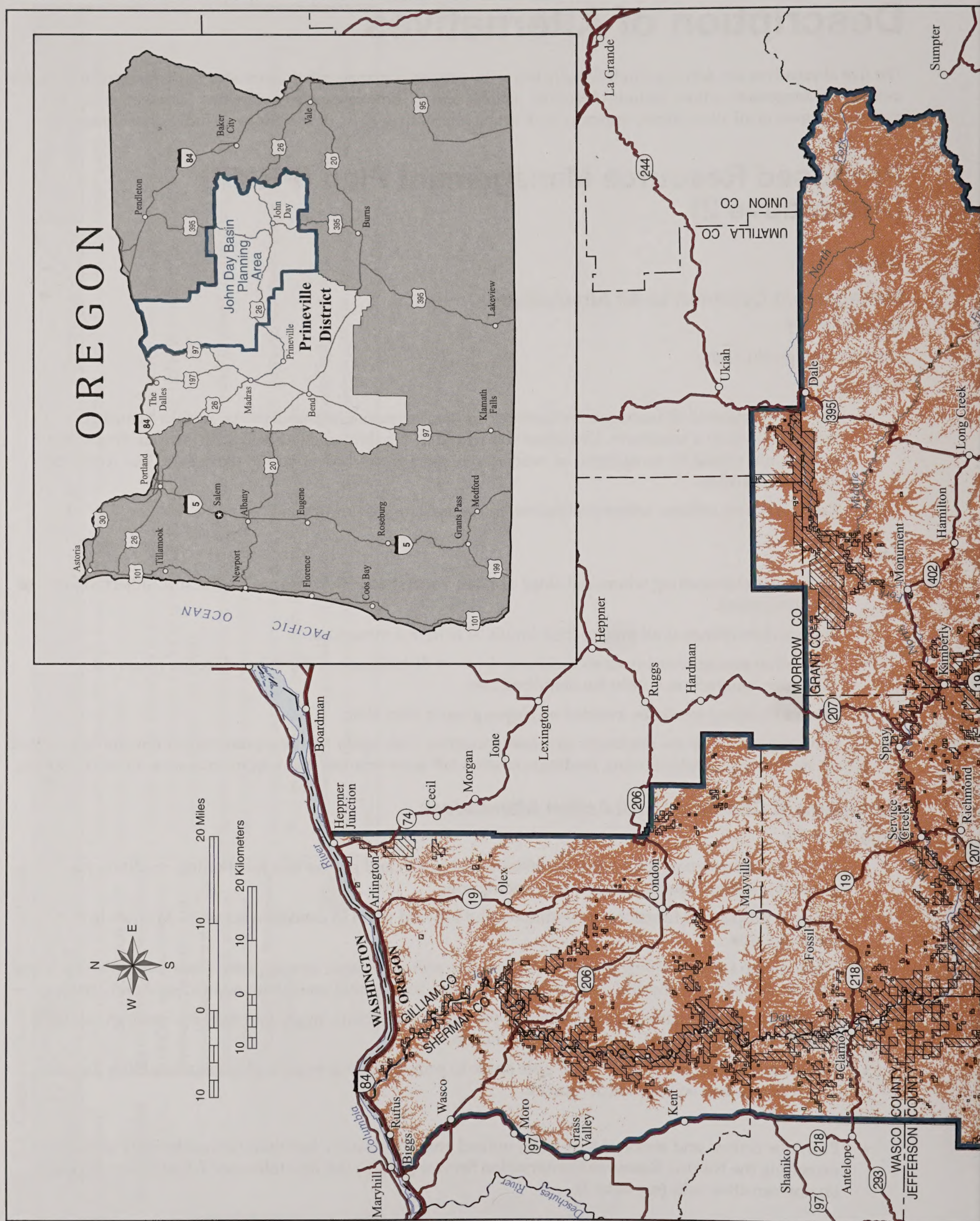
##### *Objective S2*

- Maintain and promote long-term, sustainable soil health and proper soil-functioning condition (see glossary). Restore function of non-functioning soils.
- Achieve proper soil-functioning condition or an upward trend in condition across BLM lands in the planning area.
- Maintain top soil by keeping the ground covered to prevent erosion loss, improve water infiltration for water storage, and prevent physical crust formation in areas with annual precipitation rates less than 12 inches.
- Maintain top soil organic matter content to provide soil structure, aggregate stability, water infiltration, nutrient-holding capacity, and biological function.
- Maintain soil with macro and micro pore space to provide sufficient air and water availability for root development and soil organism function.

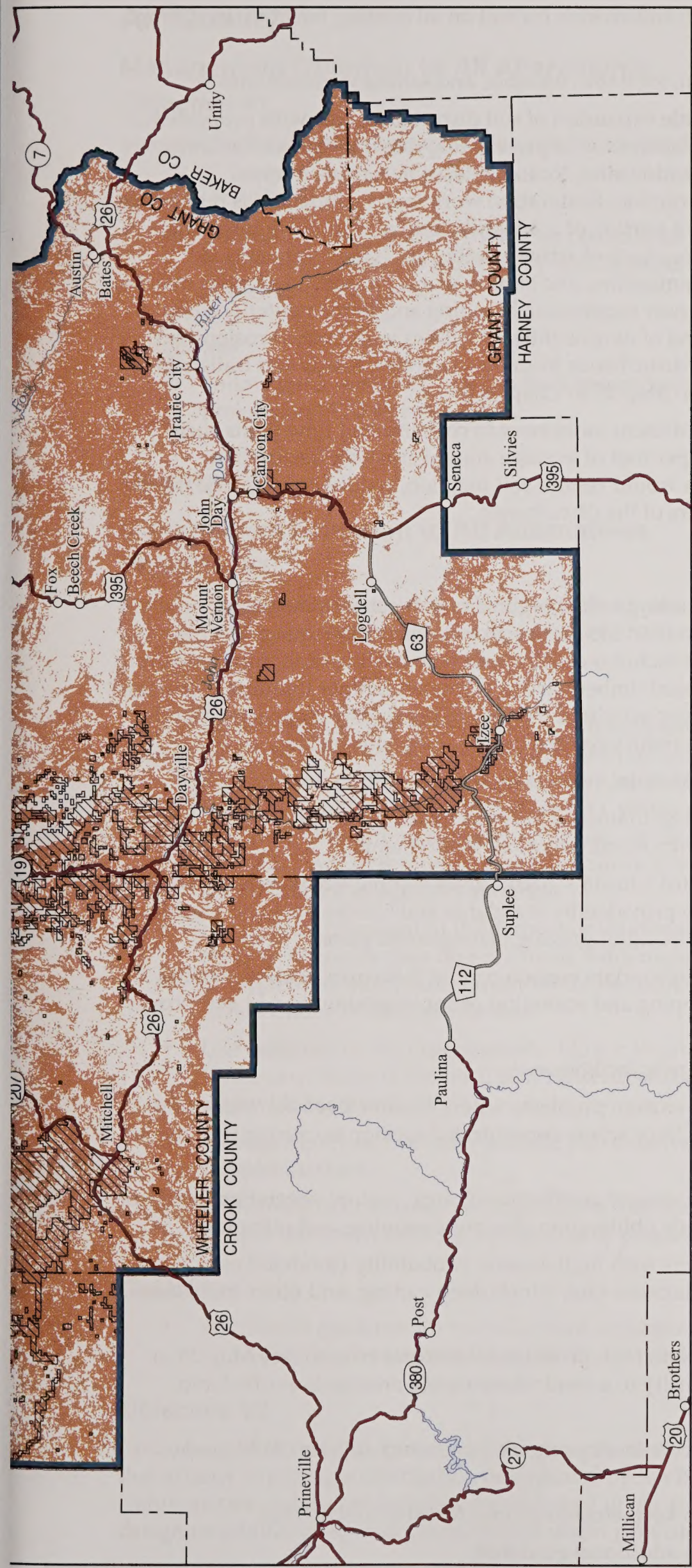
##### *Actions*

- Prescribe actions and restoration work in upland areas to ensure a less than 10% probability of erosion exceeding the Natural Resource Conservation Service (NRCS) soil loss tolerance T-Factor (see glossary) on non-sensitive soils (see Map 3).









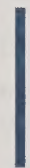


**LEGEND**

 Sensitive Soil: Soil area that when disturbed, has a high risk of being eroded.

**Administered Land**

 Bureau of Land Management

 Planning Area Boundary

U.S. DEPARTMENT OF THE INTERIOR  
Bureau of Land Management



**PRINEVILLE DISTRICT**

**John Day Basin  
Proposed Resource Management Plan  
Final Environmental Impact Statement**

2012

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**Map 3: Sensitive Soils**

Map 3: Sensitive Soils



- Implement, maintain and restore proper drainage and erosion control on all existing facilities, including but not limited to roads and trails.
- Require bonded reclamation plans for geothermal, locatable, leasable, and salable minerals sites.
- When developing or approving new facilities, trade expansion of soil disturbance area with proportional restoration, rehabilitation, decommissioning, or obliteration of pre-existing disturbed areas. Facilities include roads, trails, quarries, rights-of-way, recreation sites, locatable/leasable/salable mineral development, and other ground-disturbing construction. Restoration work may include, but is not limited to, restoring vegetation and soil function to all or a portion of a mineral material source pit, installing erosion control measures on nearby roads showing signs of active erosion, applying treatments to remove weeds and restore native bunchgrass communities, and similar work. Proportional trades may be required up to 10 miles away from the site of the new expansion. Planning and implementation should occur within 6 months of development or approval of new facilities. Facilities with excess erosion are priority areas to rehabilitate when mitigating for disturbance from new facilities. Roads and trails with a high probability of excess erosion are indicated on Map 25 in Chapter 4.
- Excess erosion includes evidence of soil loss or sediment movement in concentrated flow paths such as rills or ruts deeper than 6 inches (0.75 pounds per foot of average annual erosion). Restoration, rehabilitation, decommissioning, and obliteration would restore soil function, reduce erosion, and create viable protective vegetative cover within two years of the disturbance.

### *Guidelines*

- Limit detrimental soil impacts (see glossary), including loss of organic matter content, increased compaction, soil displacement, and erosion to less than 15% of the project area (6,534 square feet per acre) on non-sensitive soils. This 15% disturbance includes existing and new facilities and infrastructure. Projects include, but are not limited to ground-based timber harvest activities, juniper thinning, authorized OHV use off designated trails, and other activities. Reentry of previously compacted stands would include mitigation (ripping, tilling, etc.) to reduce compaction to acceptable levels.
- Recover and restore all management-related detrimental impacts on sensitive soils.
- Retain large wood amounts (greater than 3 inches in diameter) in contact with the ground for soil health (see Vegetation Section and Table 2-2 for large down wood retention requirements).
- Develop grazing systems to favor and move toward a healthy native grass community with healthy biological soil activity. Initial assessments shall be provided by Standards and Guides for Land Health Assessments (Information Bulletin No. OR-98-315) and/or grazing management plans.
- Restore native ecosystem function by applying appropriate erosion control measures, such as seeding with native perennial grasses, subsoiling, and lopping and scattering of cut vegetation to add extra cover for bare, erosion-prone soils.
- Promote use of existing facilities before allowing new facilities.
- Take corrective action to fix facility drainage and erosion problems where erosion levels are exceeding acceptable soil loss (T-factor values from the NRCS) or where concentrated erosion is causing detrimental impacts to the facility.
- On closed portions of the transportation network, ensure an effective closure, restore vegetation (active or passive), and control erosion. Practices may include obliteration, decommissioning, and other tools.
- Apply available scientific models to identify areas with high erosion probability (modeled as exceeding 0.75 pounds per foot average annual erosion rate, 6 inch deep rutting, and other indicators of excess erosion).
- On open portions of the transportation network with high probability of excess erosion (see Map 25 in Chapter 4), require a change in maintenance intensity to a level where excess erosion is verified and controlled.
- After erosion is controlled, revert to a maintenance intensity required to protect adjacent BLM lands, designated use levels, and other resource values.
- Conduct preventative maintenance as required to keep erosion control features functioning.
- Use Best Management Practices in Appendix B as additional guidance.



## Air Quality

### Management Common to All Alternatives

#### Objective A1

Meet the national ambient air quality standards as described in the Clean Air Act.

#### Actions

- Consult, coordinate and provide for compliance with applicable tribal, federal, state, and local air quality regulations, as required by the Clean Air Act; Executive Order 12088; and tribal, federal, or state implementation plans.

#### Guidelines

- Follow the direction as listed in the Oregon State Smoke Management Plan during implementation of all projects on BLM forested lands.

## Vegetation

### Management Common to All Alternatives

#### Objective V1

Maintain and restore healthy rangeland, woodland, and forest communities with diverse species compositions appropriate for the potential of the sites based on disturbance patterns and frequencies.

#### Actions

- Continue to use the Prineville District Integrated Weed Management (IWM) Environmental Assessment (#DOI-BLM-OR-P000-1993-0062-EA) until revised or replaced. This district-wide EA provides a full IWM program for all BLM lands. Continue to use the Lower John Day River Integrated Weed Management EA (#DOI-BLM-OR-P000-1993-0063-EA), which provides a fully integrated weed management program including all weed management practices on BLM lands along the lower John Day River (river mile [RM] 10 to 122). Adopt through plan maintenance any EAs or other documents that provide updated direction for the weed management program.
- For projects proposed in Wilderness or Wilderness Study Areas, these actions are subject to site-specific analysis to ensure they do not impair wilderness values or preclude Wilderness Study Areas or portions of Wilderness Study Areas from Wilderness designation as directed in the Interim Management Policy for Lands Under Wilderness Review.
- Use guidance in the Programmatic EIS for Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (October 2, 2007) and subsequent guidance being developed through the Oregon Statewide Herbicide EIS.
- Management practices may include preventative, manual, mechanical, prescribed fire, biological, and chemical actions.
- Implement maintenance and restoration treatments including but not limited to: seeding or shrub/juniper reduction utilizing mechanical or prescribed fire.

#### Guidelines

- Additional guidance for noxious weed management is displayed in Appendix B of the Programmatic EIS for Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (October 2, 2007).

#### Objective V2

Conserve federally listed species and the ecosystems on which they depend (BLM Manual 6840, p. 0.1). Ensure that actions requiring authorization or approval by the BLM are consistent with the conservation needs of special status species and do not contribute to the need to list any special status species under provisions of the ESA, or designate additional special status species under provisions of BLM Manual 6840.



## Actions

- Special status species would continue to be identified according to BLM Manual 6840 and BLM OR/WA 6840 policy and criteria in IM-OR-2007-072 or subsequent IM updates. See Appendix D for the current list of Special Status Plants.
- Design and implement relevant management activities to be consistent with BLM adopted recovery plans, conservation assessments and strategies, and other appropriate documents.
- Evaluate all projects for their effects to special status species and their habitats when authorizing activities. Conduct an assessment of the botanical resources. The assessment should be commensurate to the level of anticipated impacts and include consideration of:
  - Species and/or habitat presence.
    - Review GEOBOB data base, and/or conduct field surveys during appropriate seasons. In situations where data are insufficient to make an assessment of proposed actions, surveys of potential habitats would be completed prior to action being taken, or presence will be assumed.
  - Determination of project effects including discussion of consistency with applicable recovery plans, conservation assessments and strategies, and other appropriate documents.
  - Necessary mitigation measures and habitat enhancement opportunities.
- As appropriate, adjust clearances and mitigation requirements to all ongoing or planned projects when new information becomes available for populations, habitats, or special status listing.
  - Include the following or similar contract specification: "The Government may direct the Contractor to discontinue all operations in the event that listed or proposed threatened or endangered plants or animals protected under the Endangered Species Act of 1973, as amended, or Federal candidate, sensitive, or state-listed species, identified under BLM Manual 6840, are discovered to be present in or adjacent to the project area. Actions taken under this paragraph shall be subject to the Suspension of Work clause in Section I, FAR 52.242-14."
- Formal and informal consultation with the U.S. Fish and Wildlife Service would be initiated on all proposed actions that may affect any Federally listed or candidate threatened or endangered species.

## Guidelines

- Take action to determine the distribution, abundance, and management needs of special status species occurring on BLM-administered lands.
  - Document observations of special status species.
- Conduct periodic surveys of potential habitats and monitor active and historic sites to determine occupancy and management consistency.
- Balance the need for restorative actions to address long-term threats to special status species with the short-term need to protect special status species and their habitats.
- Individual species requirements would be included in management prescriptions.

## Management Common to All Action Alternatives

### Objective V3

Return community composition to within the Acceptable Range of Variability (ARV) for all Biophysical Settings (BpS) to the extent possible on BLM lands (see Appendix E). Maintain and restore healthy rangeland, forest, and woodland habitats with diverse species compositions appropriate for the site's potential based on disturbance patterns and frequencies, including the maintenance of native bunch grass and biological soil crust integrity.

- Under normal burn frequencies, juniper occupation will be cyclical but will not persist across most of the planning area. The Juniper Steppe Woodland BpS identifies those sites where fire return intervals are much lower due to topography or soils and where juniper can occupy the site for relatively extended periods. These are the areas most likely to contain old growth juniper (see glossary for old growth definitions). Additionally, potential old growth juniper areas are identified using soils, local knowledge, and existing vegetation mapping. Late seral conditions in the Mountain Big Sagebrush with Conifers, Wyoming Big Sagebrush Semi Desert with Trees, and Stiff and Low Sagebrush with Trees BpSs have the potential for old growth juniper development and management.



## Actions

- Maintain or reduce juniper occupation to within the Acceptable Range of Variability for the following BpSs: Mountain Big Sagebrush with Conifers, Wyoming Big Sagebrush Semi Desert with Trees, and Stiff and Low Sagebrush with Trees. Exceptions occur in some late seral conditions within these BpSs where they have the potential for old growth juniper development and management.
- To capture the natural variability of the landscape, the smallest analysis unit for ARV analysis would normally be 20,000 acres. It is recommended that analyses be completed at the subecoregion level (see subecoregion descriptions and Table 3-1 in Chapter 3).
- Restoration projects would be designed to create vegetation patches with the size, shape, structural elements, extent, and spatial juxtaposition expected under endemic disturbance processes (e.g., wildland fire) and to maintain or restore connectivity of priority wildlife habitats.
- Manage vegetation and fuel loading to trend toward Fire Regime Condition Class 1 (FRCC 1; see glossary) to facilitate future disturbance and succession to sustain conditions within site capability. Example actions are detailed in the Fuels section.
- Treat juniper using full and partial cutting, wildland fire, chaining, mowing, and/or chemical treatment.
- Where necessary, reduce understory “young” juniper within old growth juniper stands primarily through mechanical treatments that will not jeopardize old growth characteristics.

## Guidelines

- Assess effects of vegetation altering projects every 5 years across the planning area to ensure the affected BpS(s) are moving to or remain within ARV.
- Existing old growth juniper trees (see glossary) and stands should be retained in all mechanical treatments, and efforts should be made to limit loss when prescribed fire is used.
- If new techniques, classification refinements, or site-specific data are obtained, adjustments in the BpS (see glossary) map or classification would be made. This would not change the objective to manage for a variety of stand conditions appropriate to the landscape potential, but would refine the data to more accurately reflect what is occurring on the ground.
- Restoration activities may include: seeding, salvage, hydrologic control activities and devices, noxious weed treatments, area closures, motorized use restrictions, repair or replacement of minor facilities, fence construction, mulching, hazard tree removal, tree and shrub planting, snag creation (chemical, biological, or mechanical), down wood placement, commercial harvest, forest health treatments, fuels treatments, and insect and rodent control.
- Examples of the types of projects expected under the objectives, actions and guidelines for general vegetation management include:
  - Removing “young” juniper in areas where it exceeds ARV and is fragmenting shrub or grassland patch sizes.
  - Seeding annual grass or weed dominated sites that are fragmenting shrub or grassland patch sizes.
  - Reducing the amount of mesic (moist) forest species on ponderosa pine and dry-mixed conifer BpS by thinning targeted species.
  - Removing competing invasive coniferous species in aspen stands, followed by prescribed fire where appropriate.
- Vegetation treatments, including the use of naturally ignited fires in the AR zone, would be based on one or more of the following needs:
  - Removal of public health and safety hazards or vegetation that threatens improvements.
  - Species composition, structure or disturbance adjustments to meet ARV or Fire Regime Condition Class objectives.
  - Desired stocking densities (given site capability and ARV objectives).
  - Desired basal area, or crown bulk density.
  - Insect and/or pathogen disturbance.
  - Excessive ladder fuels (canopy base height).
  - Desired fuel loads.



- Allotments or portions of allotments that have failed Land Health Standards and Guidelines, and the failure is attributed in part or whole to vegetative conditions.
- A Rangeland Condition rating of "Fair" or below.
- Reduction of invasive species or noxious weeds.
- Reestablishment of native and desirable species.
- Salvage of dead or damaged trees.
- Prioritizing Vegetation Treatments:
  - Treatment priorities would be based on an assessment of whether a single treatment (maintenance) can maintain progress toward ARV or whether multiple, sequenced treatments (restoration) are necessary. Maintenance treatments would generally receive higher priority than restoration treatments due to lower amounts of inputs and higher potential for success.
  - Treatment priorities would also be based on an integrated analysis of the potential multi-resource benefits of treatments in a particular area. Map 4 displays the current assessment of priority needs.
  - Treatment areas and priorities shown on Map 4 were developed based on an analysis of current vegetation conditions and their spatial relationship to other priority resource needs. These priorities would provide guidance for where treatments should occur; however, annual funding and other priorities would be considered when making the final determination of priority treatment areas. Areas with higher scores based on the number of factors benefited would be addressed first unless funding or specific objectives are being targeted elsewhere. Prioritization shown on Map 4 was based on the following criteria:
    - Wildland Urban Interface (would take precedence in most situations).
    - Community Watersheds.
    - Resource values (special wildlife habitats and presence of forest vegetation).
    - Current field data indicating vegetation treatments are needed for a variety of reasons.
- Additional factors to consider when determining project priorities include:
  - Adjacent landowner interest in cooperative management or other partnerships.
  - Areas where biomass or other products can be realized.
  - Projects with targeted funding or resource objectives.
  - BpS communities with the furthest departure from ARV objectives.
- Treatments that restore stand conditions consistent with objectives of allowing wildland fire to achieve resource objectives (see glossary) (see Fire section of this chapter).
- Criteria for using mechanical versus prescribed fire treatments:
  - Wildland fire is the preferred treatment method when site conditions allow.
  - To meet resource objectives, it may be necessary to limit prescribed fire or the use of heavy equipment. The following conditions require detailed project design criteria to ensure treatment methods address site specific resource concerns or forest product availability:
    - Phase III juniper woodlands (see glossary).
    - Densities of deep rooted grasses are less than 1-2 plants per 10 square feet or annual grass compositions greater than 25%, or aridic soils with less than 12 inches annual precipitation.
    - Surface fuel loads sufficient to generate an active crown fire.
    - Adjacency of sensitive resources.
    - Potential exists for the removal of wood products that would be degraded or lost if prescribed fire were used.
    - Potential for invasive species or noxious weed expansion or dominance.
- Design vegetative treatments with irregular edges.
- Leave unburned patches within wildland fires when they do not compromise firefighter or public safety.
- Design vegetation treatments to increase existing patches that are below those characteristic of patches produced by average fire size described in the BpS description (on file with the Prineville District BLM).
- Create snags and down woody material to meet snag and down wood retention requirements for soils and wildlife within treatment areas (see Table 2-2 and Soils and Wildlife sections of this chapter).
- Create snags if necessary to meet retention requirements.



**Table 2-2. Down Wood Densities for Managed Stands (total tons/acre includes large pieces)<sup>1</sup>**

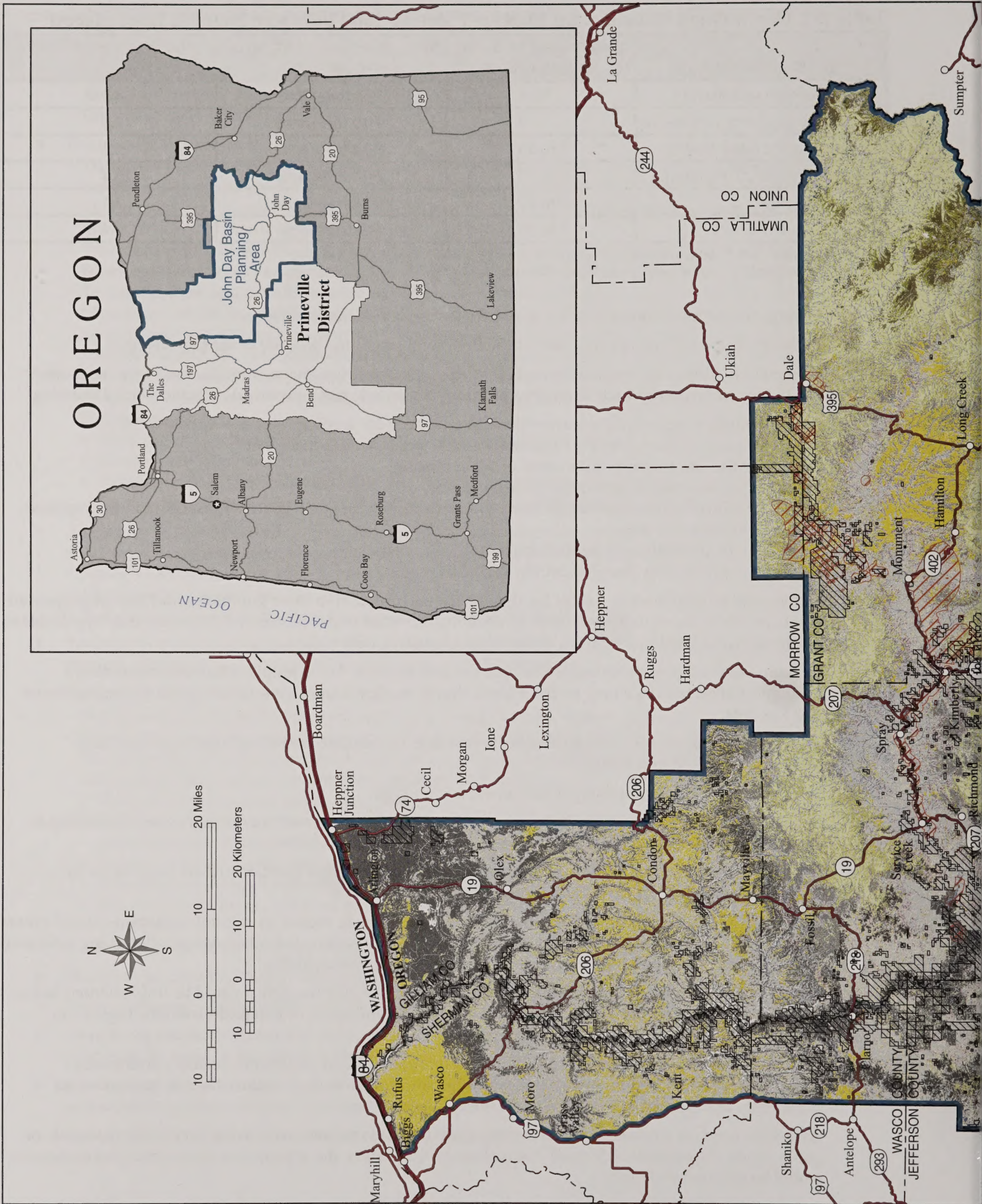
Biophysical Setting	Tons/acre of Material <3 inches dbh	Total Tons/acre of Material >3 inches dbh	Pieces of Large Down Wood/acre <sup>2</sup>
Juniper steppe woodland	N/A	1- 4 tons/acre	4.5
Ponderosa pine, dry and mesic	3	4-10 tons/acre	2.5
Dry montane mixed conifer	7 to 10	7-12 tons/acre	6.4
Mesic montane mixed conifer	7 to 10	7-14 tons/acre	23.4
Lodgepole pine	7 to 10	8-24 tons/acre	2.1
Aspen – mixed conifer	7 to 10	7-14 tons/acre	6.4

<sup>1</sup>Large down wood: >19.7 inches diameter at the large end, decay classes 1-4, and > 6.6 feet long.

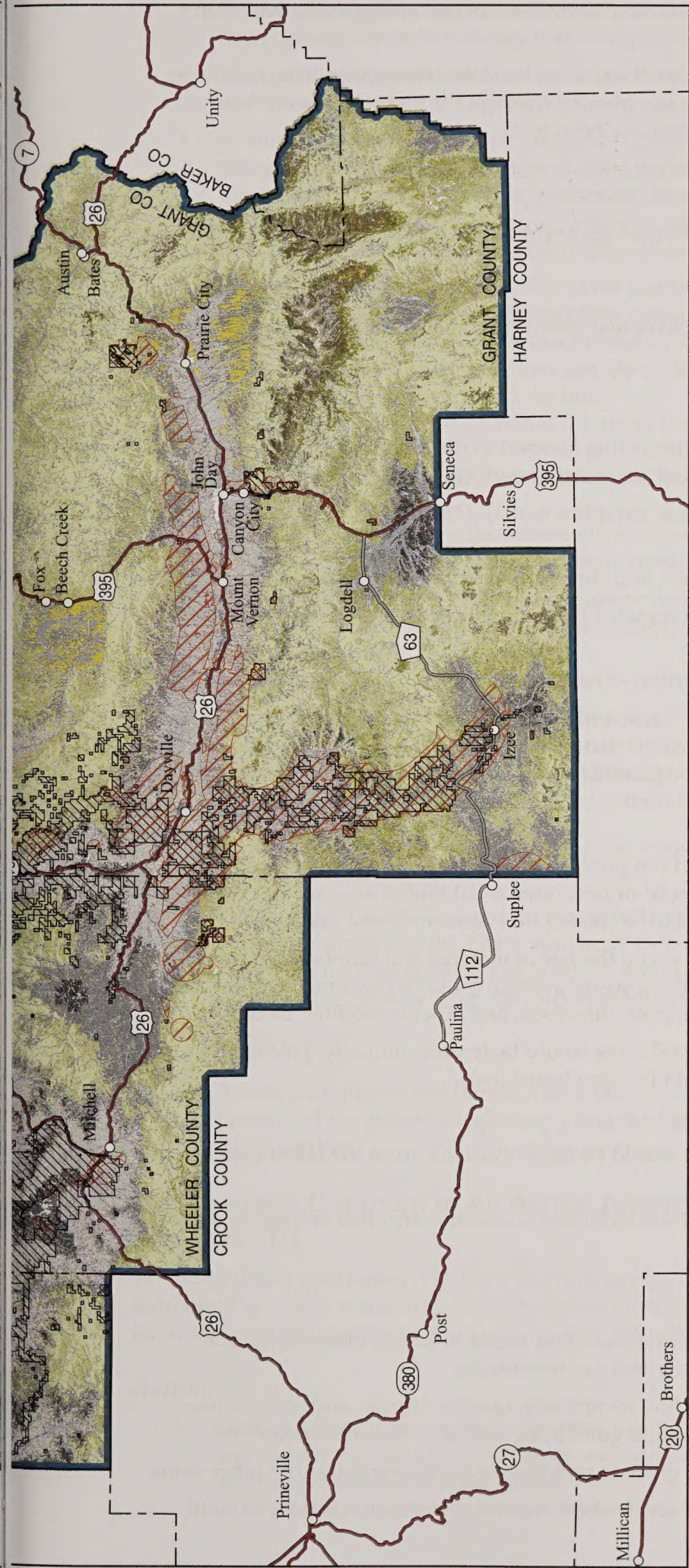
<sup>2</sup>Site-specific fuel loads would be developed for individual stands.

- Manage for multiple canopies when appropriate for the BpS and seral stage.
- Manage canopy closure appropriate for the BpS, seral stage, and wildlife cover requirements.
- Where compatible with restoration and other resource objectives, manage for the long-term, sustained production of forest products through a program of periodic precommercial and commercial thinning.
- Apply the following criteria when determining the need for seeding (also see Appendix B):
  - Increase current densities of < 1 perennial bunch grass per 10 square feet.
  - Stabilize the site and minimize water or wind erosion.
  - Reduce the invasion of nonnative invasive plants.
  - Prevent critical habitat for federal listed threatened or endangered species from being more impaired than if nothing was done.
  - Increase the diversity of wildlife habitats.
  - Provide a green strip (see glossary) in WUI areas.
- Native seed would be used, except for the exceptions provided in these guidelines and Best Management Practices (BMP) listed in Appendix B. Exceptions provided in guidelines and BMPs are only applicable in Wilderness and Wilderness Study Areas when consistent with policy.
- Develop seed mixes appropriate to the land use and location. For example, a burned area within a Wildland Urban Interface may warrant a mix that is predominantly non-native due to its fire resistance and low cost.
- Seed species selected for a mix should be compatible, i.e., similar seed sizes, planting depth, and application method and timing.
- Select species that will not likely out-compete one another.
- In general, the use of a “nurse crop” such as annual forbs or grasses is not recommended. If seeding is necessary, the use of perennial or short-lived perennial species is preferred.
- When consistent with restoration objectives, incorporate pollinator habitat needs in seed mixes by including quality nectar plants and larval host plants.
- Rehabilitation would be considered whenever there is damage caused by natural or human-caused events such as erosion, wildland fire, trespass, mining, road construction, and other ground-disturbing activities in order to facilitate, maintain, or move conditions toward site capability.
- Rehabilitation after disturbance events (when effects are outside the ARV) would be implemented before additional damage occurs to the disturbed area, down slope areas, or before undesirable vegetation becomes established.
- After a disturbance event that results in undesirable soil or plant conditions, review current uses, including recreation, rights-of-way and permitted uses to determine whether the site has recovered sufficiently to support those uses without further degradation.
- Assess the need for treatments on surrounding private lands as they relate to the success of treatments on public lands. If treatment is deemed desirable on private lands, the appropriate agreements and authorities would be pursued and used.









Map 4: Potential Vegetation

## LEGEND

- Planning Area Boundary**
- Priority Vegetation Treatment Area**
- Administered Land**
  - Bureau of Land Management
- Biophysical Settings**
  - RM Subalpine Upper Montane Riparian System
  - RM Subalpine-Montane Mesic Meadow
  - RM Montane Riparian Systems
  - Riparian Systems
  - IMB Montane Riparian Systems
  - RM Subalpine Wet-Mesic Spruce-Fir Forest & Woodland
  - RM Subalpine Dry-Mesic Spruce-Fir Forest & Woodland
  - RM Lodgepole Pine Forest
  - NRM Subalpine Woodland & Parkland
  - IMB Aspen-Mixed Conifer Forest & Woodland
  - NRM Western Hemlock-Western Red-Cedar Forest
  - NRM Ponderosa Pine Woodland - Xeric
  - NRM Ponderosa Pine Woodland - Mesic
  - NRM Dry-Mesic Montane Mixed Conifer Forest

- Wyoming Big Sage Semi-Desert w/ Trees
- RM Alpine/Montane Sparsely Vegetated Systems
- RM Alpine Fell-Field
- Mtn Big Sagebrush w/ Conifers
- Low and Stiff Sagebrushes w/ Trees
- IMB Mtn Mahogany Woodland & Shrubland
- IMB Greasewood Flat
- IMB Basin Big Sagebrush Shrubland
- CP Scabland Shrubland
- CP Low Sagebrush Steppe
- Juniper Steppe Woodland
- NRM Subalpine-Upper Montane Grassland
- IMB Semi-Desert Grassland
- CP Steppe and Grassland

### Abbreviations:

- CP= Columbia Plateau
- IMB= Inter-mountain Basin
- NRM= Northern Rocky Mountain
- RM= Rocky Mountain

U.S. DEPARTMENT OF THE INTERIOR  
Bureau of Land Management



## PRINEVILLE DISTRICT

### John Day Basin Proposed Resource Management Plan Final Environmental Impact Statement

2012

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Map 4: Potential Vegetation: Biophysical Setting (BpSs) and Priority Vegetation Treatment Needs



- Following vegetation treatments or disturbance, determine limitations on livestock grazing based on clearly defined and measurable recovery objectives.
- Unless recommended otherwise by an ID Team, livestock are to be excluded from vegetation treatment and disturbed areas for the entire first year after the disturbance, through the second growing season, or until monitoring results show that recovery objectives have been met.
- Recovery objectives may include those related to: biological soil crusts, species composition, seed production, soil stability, ground cover, and shrub establishment.
- When implementing vegetation treatments, retain diverse age and size classes appropriate for the BpS.

#### **Objective V4**

Provide products when compatible with plan resource objectives and result from managing for healthy forest systems. Provide sufficient forage for cattle and wildlife.

#### **Actions**

- Allow the use of forest products on all forest lands (including juniper) in the planning area, except lands designated as Wilderness or WSA, and areas managed for protection of wilderness characteristics.
- Allow the use of forest products for incidental use (i.e., campfire wood) if the material is dead and on the ground.
- Reduce or maintain densities of forest species, juniper, and shrubs to meet BpS characteristics.
- Restore native bunch grass communities on areas dominated by noxious weeds or annual grasses through treatment and reseeding.
- Use wildland fire to increase palatability and production of herbaceous forage.
- Allow commercial and noncommercial collection of forest and juniper products within designated areas as identified to meet resource objectives and within sustainable limits. These products would be harvested by permit only and management would be guided by site-specific NEPA guidance and permit collection regulations. Products include: commercial timber, salvage timber, post and poles, firewood, juniper boughs, biofuels, and cones.
- Lands available for forest product production would not provide an assigned allowable sale quantity but rather a probable sale quantity (PSQ) of commercial or noncommercial timber volume that would fluctuate annually depending on the amount of land to be treated that contains forest products.
  - Probable Sale Quantity can be estimated, but depends on the size of material and number of acres treated. Therefore, the PSQ would vary from year-to-year, but a yearly average could be sustained over the long term. Commercial products include sawlogs, poles, posts, firewood, and other wood fiber biomass.
- It is anticipated that an average of approximately 1,000 acres would be treated annually. This would generate an average PSQ of approximately 2.54 mmbf (million board feet).
- Create a 5- to 10-year forest health treatment strategy.
- Include specific types and amounts of products that would be made available from the forest health strategy.
- Create a map of forest health treatment stands that have sufficient access and are close enough to a town to provide biomass or firewood opportunities.

#### **Guidelines**

- If resource objectives can be met and there is sufficient demand for wood products then mechanical restoration treatments should take priority over prescribed fire treatments.
- Salvage of killed and damaged trees from wildland fire, windthrow, insects, disease, and other causes would be consistent with snag and down wood retention guidelines and other resource objectives.
- When salvage is appropriate, high priority would be given to rapid action to minimize loss of timber value.
- Restrict cone collection within regeneration units or areas where natural regeneration is desired until satisfactory seedling establishment.



- Firewood and post and pole collection would be limited to material on the ground unless an area is designated as open to cutting of standing trees.
- Manage stocking rates and fuel loadings to allow stands to be resilient to endemic levels of fire, insects, and disease by using the appropriate response tool: mechanical thinning, or wildland fire.
- In areas outside of ARV, objectives and vegetation Best Management Practices for seedling, sapling, and pole densities (especially for shade-tolerant species and juniper), use commercial or precommercial thinning to reduce competition stress to older or larger trees when there is economic demand. Consider the use of prescribed fire to reduce stocking, seed reserves, and reduce ladder fuels when economic demand and crown fire potential are low or as a follow-up treatment after mechanical thinning.
- Forest treatments would generally favor leaving the larger trees in a given stand. However, treatments would be based on site-specific resource decisions and could remove trees of any diameter if necessary to attain forest health objectives and move a forest stand towards ARV. Large trees are described in each of the applicable BpS descriptions (on file with the Prineville District BLM). Examples where removal of large trees may be appropriate include:
  - Stocking densities are such that the stand is susceptible to bark beetle, mountain pine beetle, or root rot mortality.
  - Where dwarf mistletoe in overstory trees will inhibit development of the understory, and risk stand loss (Beatty 1997).
  - Species composition adjustments are necessary to achieve ARV objectives.
  - An ID Team identifies a need to create spatial and structural diversity within the stand.
- Harvest may be accomplished by a variety of manual and mechanized techniques including feller-bunchers, harvesters, skidders, portable chippers, chainsaws, pick-up trucks, and other wheeled or tracked equipment.

## Fuels

### Management Common to All Alternatives

#### Objective FU1

Provide for the safety of firefighters and the public from the effects of wildland fire. Restore and maintain the integrity of ecosystems.

- The Healthy Forests Restoration Act of 2003; A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: A 10-Year Comprehensive Strategy (USDA *et al.* 2006); and the National Fire Plan (USDA *et al.* 2000) all emphasize the need to reduce hazardous fuels that pose a risk to Communities at Risk from the undesired effects of a wildfire.

#### Actions

- Accomplish prescribed burns in accordance with approved fire management plans (see glossary), prescribed fire plans (see glossary), and the State of Oregon Smoke Management Plan (ODEQ 2006a; ODEQ 2006b).

### Management Common to All Action Alternatives

#### Objective FU2

Wildland urban interfaces (WUI) that are surrounded by live and dead vegetation would be managed so that a wildland fire would burn with fire behavior conducive to safe and successful suppression efforts under hot, dry summer weather conditions. See glossary for a definition of the Wildland Urban Interface (WUI) and WUI Zones.

#### Actions

- Reduce three-dimensional fuel profiles (continuous vertical and horizontal vegetation distribution) and reduce the risk of crown fire or uncontrollable surface fire (see the Vegetation section for estimated amounts of vegetation treatments).



- Design fuels and vegetation treatments to provide for human safety during a wildfire while considering recreation opportunities, wildlife habitat and corridors, visual quality, air and water quality, and public access, including ingress and egress during emergencies.

### Guidelines

- Meet hazardous fuels reduction objectives through single or multiple fuels treatments including thinning, mowing, pruning, piling, prescribed fire, grazing, or other activities.
- For planning treatments, forested vegetation within the Suppression WUI Zone (see Map 5) would be subdivided into three bands with treatments designed to give desired fire behavior given 90th percentile (high) summer weather conditions (see glossary). The actual width of these three bands and treatment prescriptions would vary according to site-specific conditions such as vegetation (fuel) type, density, structure, proximity of homes to property boundaries, prevailing winds, topography, and other natural fuel breaks.
  - The first band (nearest to homes, private property, and along ingress and egress routes) would be managed for conditions that are not expected to support crown fire, and are expected to result in surface fires with flame lengths of less than 2 feet under 90th percentile weather conditions.
  - Treatments in the second band would be designed to reduce the probability of crown fire initiation and spread, and keep surface fuel flame lengths below 3 to 4 feet under 90th percentile summer weather conditions.
  - Treatments in the third band (farthest away from homes, private property, and ingress and egress routes) would be designed to reduce the occurrence, size, and severity of crown fires by breaking up fuel continuities and limiting ladder fuels. Most wildfires would be limited to surface fires with less than 4-foot flame lengths under average weather conditions, with opportunities for limited passive crown fire (occasional ignition and torching of individual or small groups of overstory trees). Stand replacement fires would be a rare occurrence. Crown fire approaching this zone would fall from the tree canopy to the forest floor in this area due to lack of horizontal and vertical fuel continuity. Treatment objectives in the third band would place a higher emphasis on ecological needs as long as fuel continuities and ladder fuels are reduced on at least 50 percent of the band area.
  - Prescribed fire in forested habitats within suppression zones would be used only for burning piles or broadcast burning in smaller areas where smoke and risk to property could be managed at acceptable levels. Larger underburns would be considered in the third treatment band.
  - Based on expected forest vegetation re-growth rates, re-treatment is expected to occur approximately every 15 to 20 years for tree thinning and every 5 to 10 years for brush cutting/mowing within all three bands. Mechanical treatment would generally precede prescribed fire.
- Within rangeland or woodland vegetation (including juniper woodlands) in the Suppression WUI Zone, vegetation would be managed differently than in forested lands; they would have only two treatment bands with different prescriptions. As in forested areas, the actual width and treatment prescriptions of the two treatment bands would vary according to site-specific conditions.
  - The first band (nearest to homes, private property, and along ingress and egress routes) may be up to 600 feet wide. Approximately 50 to 70 percent of the area within this band would be treated to reduce the potential for crown fires and keep surface fuel flame lengths within 3 to 4 feet under 90th percentile conditions, where direct initial attack can still be effective.
    - Brush treatments would be initiated when shrub canopy cover exceeds 50 percent or is greater than 2 feet in height.
    - Thinning in this area would favor leaving older juniper trees (greater than 150 years old) while removing younger trees.
    - All naturally occurring juniper snags would be left within this band. An exception to this is snags less than 6 inches dbh in fire-killed juniper stands. In these cases, dead trees would be reduced to a density of 5 to 7 trees per acre.
    - Remove identified hazard trees that pose a threat to property, roads or other facilities.
  - The second band would extend from the outer edge of the first band to 1.5 miles. Treatments would be designed to reduce the occurrence, size, and intensity of wildfires by breaking up fuel continuities and limiting ladder fuels.
    - Under 90th percentile summer weather conditions, fire behavior would be limited to surface fires with flame lengths of 3 to 4 feet.



- Crown fires would not be expected to occur under 90th percentile summer weather conditions. There may be an occasional ignition of individual or small groups of juniper trees under extremely windy conditions.
- Juniper trees less than 150 years old would be retained in small clumps where needed for hiding cover and would be discouraged elsewhere.
- All old growth juniper would be retained, except those that provide a risk of fire spread to a structure or make control efforts unsafe.
- Treatment objectives would place a higher emphasis on ecological objectives as long as fuel continuity and ladder fuels are reduced to minimize hazardous fuels. Mosaic patterns of old juniper, shrub, and grass types would be emphasized.
- Additional consideration of risks, technical difficulty, and potential consequences would be used when conducting prescribed fire.
- Based on expected rangeland and woodland re-growth rates, re-treatment is expected to occur approximately every 15 to 20 years.
- Fuels treatments would have priority on BLM-administered lands adjacent to WUI communities that have the following characteristics:
  - The community is physically close to BLM-administered lands, with structures or other improvements within one mile.
  - The community is actively involved in hazardous fuels reduction, matches federal efforts on private lands, coordinates fuels reduction, or suppression capability improvements with protection agencies (e.g., Oregon Department of Forestry, city, or rural fire districts), and takes steps to improve the resistance of their community to damage or destruction by wildfire. The community strives for a firewise designation or equivalent.
  - A Community Wildfire Protection Plan has been completed for the community.
  - Adjacent BLM-administered lands exhibit heavy fuel loading and high potential for crown fire or fast moving surface fire under average weather conditions, especially if those fuels are “upwind” given the dominant summer wind directions.
  - Adjacent BLM-administered lands provide opportunities to meet multiple objectives through fuel treatment activities, including improvement of wildlife habitat, enhancement of recreation or visual quality, restoration of ecosystem integrity, reduction of social conflicts, or outputs of marketable products or energy from the removal of hazardous fuels treatments.
- Where WUI zones intersect other specially designated areas such as WSA, WSR corridors, ACECs, or RNAs, fuels treatments would be designed in a manner that retains or enhances the overlapping special management objectives to the extent practical without compromising firefighter safety or improvements.

### **Objective FU3**

Within the Appropriate Response Zone (see glossary), manage vegetation and live and dead fuel loads, distribution, and vertical continuity to trend toward Fire Regime Condition Class 1 (FRCC 1) and be within the Acceptable Range of Variability for the BpS (see vegetation section). Effects of disturbance would be consistent with those characteristic of the BpS fire in which they occur. Fuels management within the Appropriate Response Zone would have the same objectives and actions for vegetation management as described in the vegetation section of this chapter.

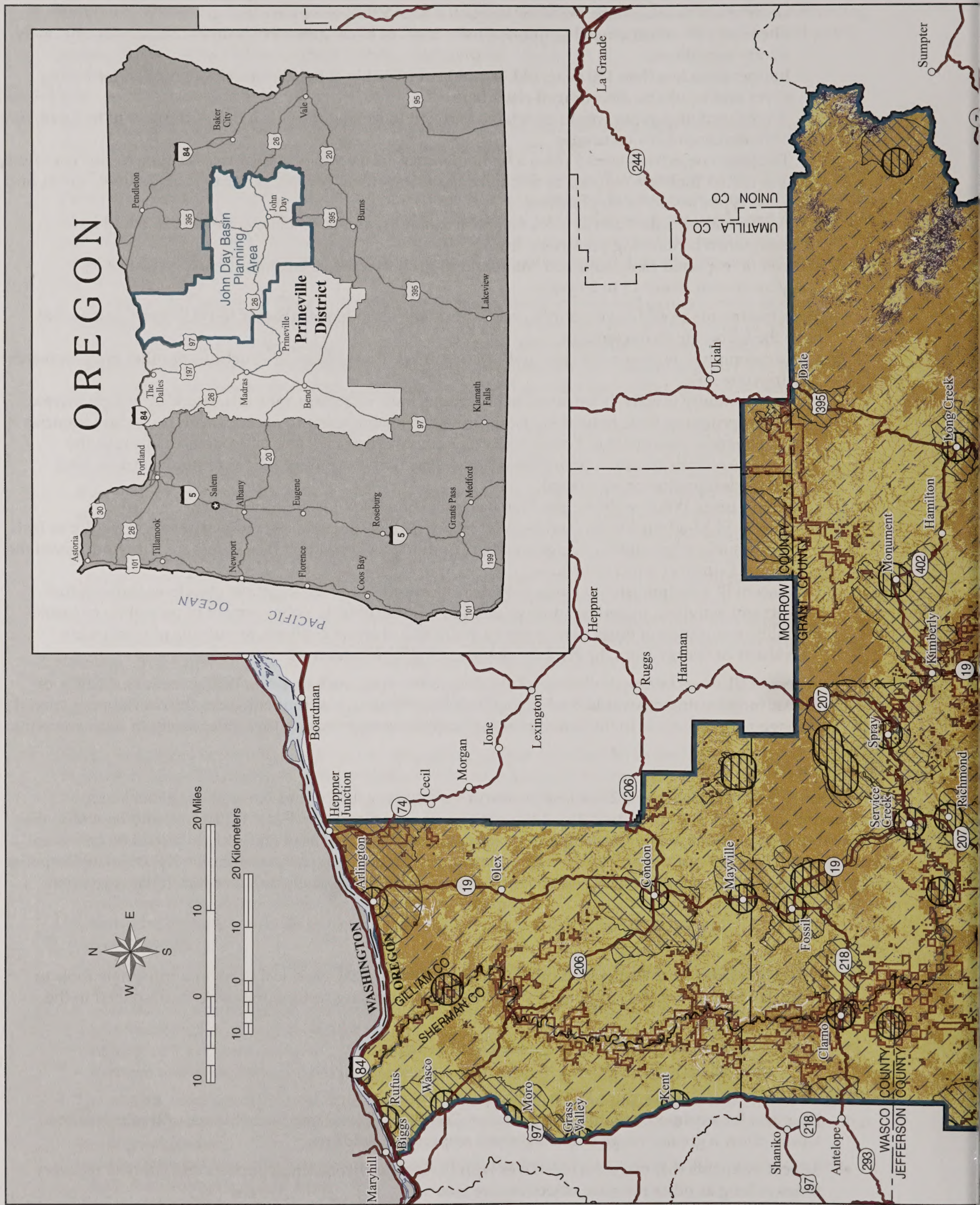
### **Actions**

- Use prescribed fire; thinning; and other mechanical, biological, chemical or other appropriate tools to meet fuel load objectives. Implement post-disturbance grazing rest requirements as described in the Vegetation section.
- Desired Fuel Loadings (tons/acre) are identified in Table 2-2.

### **Guidelines**

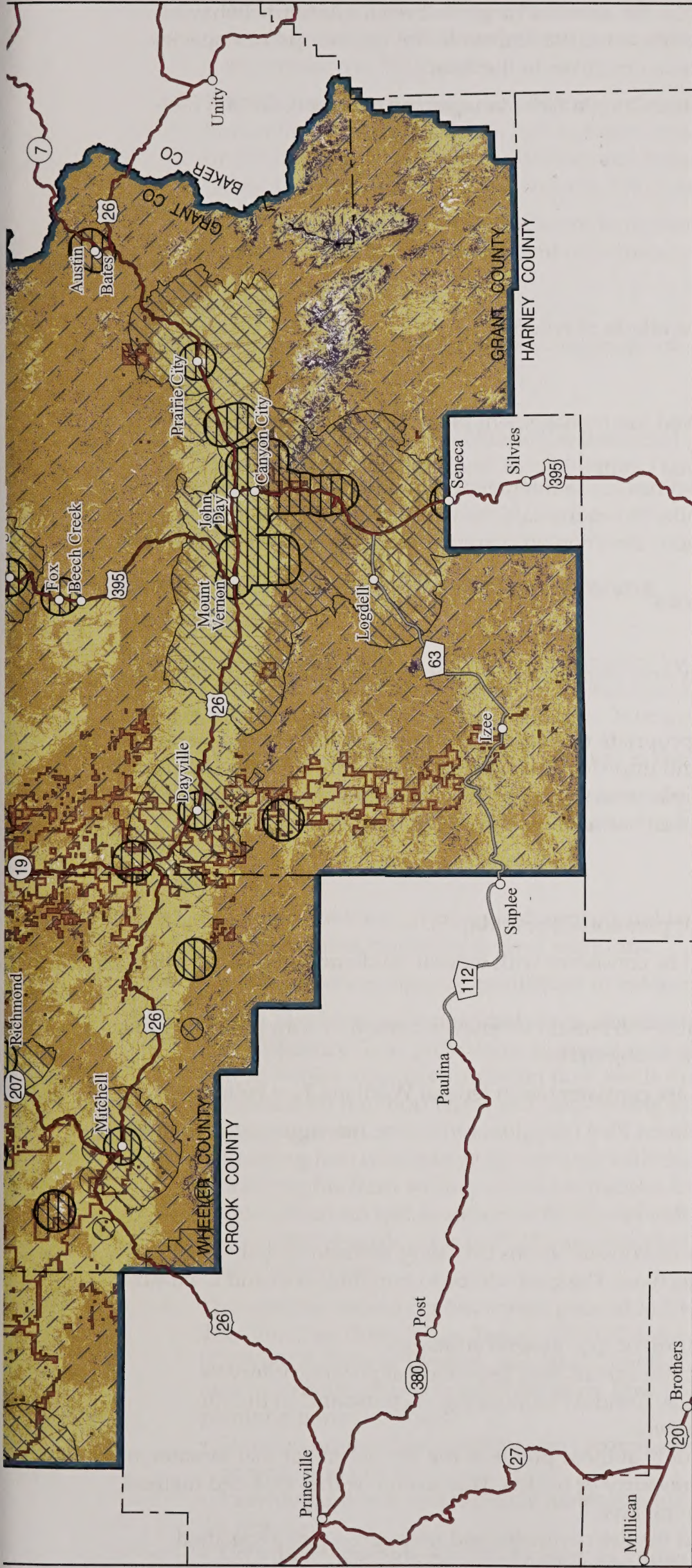
- Priorities for treatment would be Fire Regime Condition Class 2 and 3 conditions, or treatments that would allow a greater range of management response to wildfires.
- Select treatments that can meet objectives with the least environmental impacts and shortest recovery times as long as other resource objectives are met.



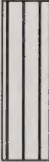
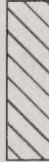
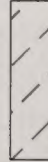

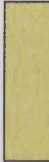





Map 5: Fire Response Zones and Fire Regime Condition Class





## LEGEND

-  Alternative 1 Wildland Urban Interface and Alternative 2-5 Full Suppression
-  Alternatives 2-5 Wildland Urban Interface
-  Alternative 2-5 Appropriate Response
-  Fire Regime Condition Class 1
-  Fire Regime Condition Class 2
-  Fire Regime Condition Class 3

-  Planning Area Boundary
- Administered Land**
  -  Bureau of Land Management

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## PRINEVILLE DISTRICT

### John Day Basin Proposed Resource Management Plan Final Environmental Impact Statement

2012

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Map 5: Fire Response Zones and Fire Regime Condition Class



- Reduce crown bulk densities and increase crown base heights to a range that would limit fire behavior to appropriate amounts of crown loss based on the characteristic or desired fire regime and tree species. This would facilitate management to achieve resource objectives in the future.
- Projects would be monitored according to the Central Oregon Fire Management Service (COFMS) fuels monitoring strategy.

## Fire

### Management Common to All Alternatives

#### Objective F1

Provide for the safety of firefighters and the public from the effects of wildfire.

#### Actions

- Conduct prescribed fire in accordance with approved fire management plans, prescribed fire plans, and the State of Oregon Smoke Management Plan.
- Conduct fire suppression activities under the guidelines of the Interagency Standards for Fire and Fire Aviation Operations ("The Red Book"). These standards require safe fire suppression operations and provide the local line officer and incident commander direction on current federal fire policy.

### Management Common to All Action Alternatives

#### Objective F2

- In the WUI Suppression zone, protect life, property and identified resources (e.g., municipal watersheds) when wildfire occurs.
- In the Appropriate Response Zone, implement appropriate response actions upon discovery of a wildfire.
  - Maintain or increase wildlife habitat diversity and improve ecosystem integrity through development of structurally diverse plant communities, multiple seral stages, and increased plant and animal species richness. Reduce fuel levels to decrease the chance of extreme habitat loss through stand-replacing wildfire.

#### Actions

- Provide perimeter control, at a minimum in the Suppression Zones (Map 5).
- Response to planned and unplanned ignitions will be consistent with federal Wildland Fire Policy (USDI Bureau of Land Management *et al.* 2001).
- Throughout the analysis area, allow unburned patches to remain whenever consistent with protecting life and property in order to meet vegetation and wildlife objectives.
- Implement strategies on unplanned ignitions that are consistent with federal Wildland Fire Policy.
- Add implementation direction to the Fire Management Plan (see glossary) before managing a fire to meet resource objectives.

#### Guidelines

- Base strategy for suppressing unplanned ignitions on considerations for safety, environmental, social, economic, political, and resource management objectives. The goal will be to minimize cost and maximize resource benefit.
- The management of unplanned fires can take the form of four general strategies:
  - *Monitoring* – Watching or checking fire behavior, fire spread, and fire effects at periodic intervals without taking any significant suppression actions. Conduct monitoring via personnel at the site, aerially, or from a fixed point such as a lookout tower.
  - *Point Control* – Controlling unplanned ignitions only at those points of the fire perimeter that threaten to cause unacceptable damage or loss to a specific resource or facility. This would be the preferred method of fire suppression throughout most of the planning area.
  - *Perimeter Control* – Constructing a fireline around the fire perimeter and mopping-up to a specified distance from the perimeter.



- *Full Control* – Constructing a fireline around the fire perimeter and completely extinguishing the fire (suppression). Full control and perimeter control would be the most common method of fire suppression in WUI areas.
- Potential areas where unplanned ignitions may be managed to meet resource objectives will include: Sutton Mountain, Pat's Cabin, Spring Basin (in conjunction with Pine Creek Ranch), North Fork John Day (in conjunction with the Umatilla National Forest), and South Fork John Day (in conjunction with the Ochoco and Malheur National Forests). Other areas may be added over time.
- Identify areas needing prior treatment to increase the probability that the management of unplanned ignitions would meet management objectives.

### **Objective F3**

Protect life, property, and ecological components at risk of further degradation following wildland fire.

#### **Actions**

- Implement post-fire rehabilitation as described in the vegetation section and the BLM Burned Area Emergency Stabilization and Rehabilitation Handbook (H-1742-1).

## **Aquatics**

### **Management Common to All Alternatives**

#### **Objective AQ1**

In river corridors (see Map 1), improve water quality by complying with water quality criteria specifically listed by ODEQ in OAR 340-042. Provide habitat for summer steelhead and spring Chinook salmon. Protect and enhance instream flows to protect and enhance Outstandingly Remarkable Values.

- Provide habitat to meet ODFW objectives in the Wild and Scenic River (WSR) segments.
- Manage lands adjacent to the rivers to meet state water quality requirements, satisfy obligations of the Clean Water Act, and protect and enhance Outstandingly Remarkable Values.

#### **Actions**

- Manage vegetation, grazing, and agricultural lands, and water quantity and quality on public lands to protect fisheries resources in river corridors.
- Continue to encourage and participate in independent and cooperative efforts to achieve aquatic objectives.
- The BLM adopts recommended flows identified in the John Day River Scenic Waterway Flow Assessment (see Appendix G) as provisional instream flow goals. The BLM would use a variety of tools, authorities and strategies to achieve instream flow levels that support the river values. These tools include:
  - Leasing (in the short term) and transferring existing BLM consumptive use rights to instream uses (in the long term).
  - Entering into cooperative agreements with the State of Oregon and other agencies for the purchase of water rights from willing sellers for transfer to instream uses.
  - Quantification and assertion of BLM's federally reserved water right. The BLM would identify more quantitative goals prior to BLM's assertion of federally reserved water rights during adjudication or a similar process.
- The agencies would continue their present individual and cooperative efforts to improve instream flows. The John Day River "Core Team" (BLM, Confederated Tribes of the Warm Springs Reservation of Oregon [CTWSRO], State of Oregon, and local Counties) would coordinate to identify, prioritize, and facilitate actions to help achieve interim instream flow goals. To achieve interim instream flow goals, BLM and the planning partners would:
  - Develop basin-wide priorities and recommendations for water quantity and quality improvements projects and practices.
  - Provide guidance and technical assistance to cooperative individuals and groups, such as Watershed Councils.
  - Coordinate funding sources to assist in implementing identified priorities.



- Modify management practices based on results of monitoring, new information, or meaningful changes in conditions.
- Conduct coordinated review of proposed actions within State Scenic or Wild and Scenic River Corridors with the ODFW; Oregon Division of State Lands; and Oregon Parks and Recreation Department, State Scenic Waterways Division. Future proposed projects would be subject to public review and appropriate federal, state, and tribal consultation.
- Direct fisheries habitat restoration actions would follow guidance identified under the Aquatic Conservation Strategy and also be subject to public review, and appropriate federal, state, and tribal consultation. Formal and informal consultation with the U.S. Fish and Wildlife Service or National Marine Fisheries Service would be initiated on any proposed actions that may affect federally listed threatened or endangered species. No activities would be permitted in threatened, endangered, or sensitive species habitat that would jeopardize the continued existence of such species. The habitat of threatened, endangered and special status species would continue to be monitored, maintained, and/or improved.
- The designation of a river as a wild, scenic or recreational river under the Wild and Scenic Rivers Act of October 2, 1968 explicitly reserves sufficient unappropriated water to fulfill the purposes of the Act. The amount of water reserved is the minimum amount necessary to protect the particular aesthetic, recreational, scientific, biotic, or historic features ("values") that led to the river's designation. The amount of flow reserved will vary on a case-by-case basis. Segments of the John Day River system were designated by Congress in 1988.
- The ODEQ established total maximum daily loads (TMDLs) in 2010. The BLM would develop and implement Water Quality Restoration Plans (WQRP) to guide restoration actions, meet BLM's portion of the TMDLs, fit into a multi-jurisdictional Water Quality Management Plan (WQMP), and restore water quality in the plan area.
- The BLM would use a variety of tools, authorities and strategies to achieve instream flow levels that support the river values. These tools include: leasing (in the short term) and transferring existing BLM consumptive use rights to instream uses (in the long term); entering cooperative agreements with the State of Oregon and other agencies for the purchase of water rights from willing sellers for transfer to instream uses; and, if these other tools are not effective, quantification and assertion of the BLM's federal reserved water right.
- To meet this objective, the BLM would continue to encourage and participate in independent and cooperative efforts by doing the following:
  - Establish instream water rights under state appropriate or federal law.
  - Enter into water-sharing agreements between private landowners, Oregon Water Resources Department (OWRD) and ODFW.
  - Improve irrigation systems to enhance river values by removing pushup dams, installing fish screens, and implementing irrigation efficiency projects (such as infiltration galleries) for the protection and enhancement of Outstandingly Remarkable Values.
  - Develop and enhance native vegetation to protect and enhance watershed conditions.

### *Guidelines*

- Work cooperatively with other land holders (private, state and other federal) within the basin to take actions that reduce the introduction of pollutants and improve river flows and temperature.
- The ODEQ established total maximum daily loads (TMDLs) in 2010. The BLM would develop and implement Water Quality Restoration Plans (WQRP) to guide restoration actions, meet BLM's portion of the TMDLs, fit into a multi-jurisdictional Water Quality Management Plan (WQMP), and restore water quality in the plan area.

## **Management Common to All Action Alternatives**

### *The Aquatic Conservation Strategy*

This RMP combines the management objectives, actions, and guidelines for fish, riparian habitat, water quantity and water quality into one set of objectives, actions, guidelines and Best Management Practices, which are referred to as the Aquatic Conservation Strategy (ACS).



The purpose of the Aquatic Conservation Strategy is to allocate land for riparian management, allocate water for beneficial uses, and identify tools for maintaining and restoring the integrity of aquatic habitats, watershed processes, and quality of water resources. These purposes would be met while also continuing to produce commodities from BLM-administered land. The following desired conditions together encompass the ACS vision:

- People encounter clean water, limited erosion, and lush native vegetation along streams. People observe ribbons of perennial stream flows throughout the year. Diverse riparian vegetation covers stream banks and dominates valley bottoms. Floodplains contain layers of shrubs, trees, and grasses.
- Fish and wildlife are vigorous and abundant. Pools and riffles, woody debris, water, and riparian vegetation provide adequate and complex habitat. Fish do not contain unsafe levels of contaminants. Stream channels and riparian vegetation provide aquatic habitat of high ecological status.
- Livestock and crops have consistently available water and food. Deep-rooted riparian species stabilize stream banks and facilitate access and crossing for livestock. Vigorous vegetation provides high nutrient forage. Floodplains replenish groundwater for late season release and crops have water at the peak of the growing season.

The Aquatic Conservation Strategy includes the following elements: (1) desired conditions (above); (2) planning criteria; and (3) priorities, objectives, actions, guidelines, and Best Management Practices (in this section and Appendix B). Monitoring is described in Appendix N.

Objective AQ2 below is general, as are the actions and guidelines that follow. Objective AQ3, regarding Proper Functioning Condition (PFC), is the foundation for the remaining 10 objectives. The objectives define desired conditions. Most start with the statement "Conserve and restore, within existing site capability and natural disturbance regimes," which provides flexibility necessary to adapt conservation and restoration efforts to landscape variations in the plan area. "Existing" means at the time of RMP publication.

### **Objective AQ2**

Maintain and restore the health of watersheds and aquatic ecosystems.

#### **Actions**

- Delineate Riparian Management Areas (RMAs, see glossary).
- Minimum widths of RMAs include the flood-prone areas and extend the following distances from the flood-prone area:
  - 300-foot slope distance on both sides of the flood-prone area for perennial and intermittent stream channels.
  - 300-foot slope distance from edge of wetland vegetation for lentic areas.
  - 25-foot slope distance on both sides of ephemeral draws where average annual precipitation is less than 14 inches.
  - 50-foot slope distance on both sides of ephemeral draws where average annual precipitation is greater than 14 inches.
- Manage RMAs for attainment of the aquatic objectives. Other uses are allowed in RMAs as long as they do not retard attainment of aquatic objectives. Appropriateness of other uses would be determined through site-specific assessment by a BLM ID Team considering watershed and stream limiting factors, reach capability, and aquatic objectives and identifying stipulations. In RMAs, an ID Team would review all new actions (e.g., road construction, leases, rights-of-way, and mining operations). Ongoing actions (e.g., grazing, existing roads, and existing mining operations) would be reviewed throughout the life of the plan. When objectives are not being met and actions are needed, an ID Team would recommend the site-specific actions to be taken. Table 2-3 lists measures of attainment of aquatic objectives. The ID Teams should evaluate activities appropriate for RMAs when projects, leases, rights-of-way, or other actions are proposed within RMAs.
- An ID Team would also assess (using the process described above) projects outside of stream channels, floodplains, and lentic RMAs for any ground disturbance activity greater than 1 acre; vegetation alteration more than 20 acres; and new construction or maintenance of roads, landings, or other structures.
- Identify monitoring actions (see Appendix N).



**Table 2-3. Measures of Attainment of ACS Objectives.**

Measure of Attainment of ACS Objectives	ACS Objective
Measurable attainment of water quality based on state and federal standards, sufficient for beneficial use and drinking water	Water quality AQ4, public drinking water AQ13
The Oregon Water Quality Index of major rivers to assess landscape restoration	Water quality AQ4
Applicable questions from the lotic or lentic PFC assessment	Channel and sediment AQ5, surface to groundwater AQ6, water rights and use AQ7, lentic areas AQ8, native plant communities AQ9, riparian vegetation function AQ10, locally important fish AQ11, and habitat connectivity AQ12
<b>Below are examples of measures to be used when above measures indicate non-attainment, more information is necessary, or definition of "potential natural condition" is required.</b>	
Use stream surveys, Appendix G Tables, and TMDL monitoring data	Channel and sediment AQ5, locally important fish AQ11, habitat connectivity AQ12
Regional rating curves, peak crest gauges, channel geometry studies, and other regional data	Channel and sediment AQ5, surface to groundwater AQ6, habitat connectivity AQ12
Percentage of the year streams meet State or similar flow goals for recreation and aquatic life	Water rights and use AQ7, habitat connectivity AQ12
At the watershed scale (fifth field hydrologic unit, up to 250,000 acres), evaluate the percentage of stream routes that would pass 100-year flood with a natural geometry, slope, and bed stability	Habitat connectivity AQ12
Biophysical Setting descriptions and growth form (Kiegley and Frisina 1998) for achievement of uninterrupted or released growth form	Native plant communities AQ9, lentic areas AQ8, and riparian vegetation function AQ10

- The use of Best Management Practices (BMPs) for aquatic objectives is required (see Appendix B for BMPs). Interdisciplinary teams shall review BMPs and, if adjusted, articulate how the adjusted set of BMPs achieves the original RMP objective(s). Where found to be ineffective at attaining aquatic objectives, BMPs may require modification to meet water quality objectives. Specialists may consider baseline environmental conditions; type of activity; proximity to water; disturbance level; direct, indirect, and cumulative effects; and timing. They may also evaluate new technology and relevant implementation or effectiveness monitoring data, published studies, or other sources of information in refining existing BMPs or recommending new BMPs. This process involves continued learning and applying monitoring feedback.
- Best Management Practices updates would be incorporated through plan maintenance.

### Guidelines

- Interdisciplinary teams determining activities appropriate for RMAs shall consist of at least three specialists experienced in quantitative measurements and analysis of soils, vegetation, and hydrology. When discussing activities appropriate for RMAs on fish-bearing streams, at least one member of the ID Team will be a fish biologist. Specialists conducting PFC assessments would be trained and experienced in the quantitative measurements behind the qualitative techniques of Proper Functioning Condition.
- Identify aquatic strongholds and conduct multiscale analysis. Identify priority restoration areas using objectives below. All fifth field hydrologic units (up to 250,000 acres) in the plan area are considered for their potential as population strongholds for aquatic species. For example, the population of steelhead in the North Fork subbasin is identified in the Steelhead Recovery Plan (NMFS, 2009) as one with high genetic integrity, connectivity, a strong relationship of the subpopulation to the species as a whole, and restoration and population expansion potential into adjoining watersheds. However, funding priorities for aquatic restoration would be based on the watershed assessments provided by the Subbasin Assessment (Map 6), Mid-Columbia Steelhead Recovery Plan, and as follows:



- *First priority* – Source water protection areas for drinking water, such as the Dixie and Canyon Creek Watersheds.
- *Second priority* – ESA-listed species/critical habitat and water quality limited stream channels—specifically priority watersheds, essential fish habitat, and strongholds identified in recovery planning and future efforts (see Map 6).
- *Third priority* – Fish-bearing streams with locally important fish species or riparian areas lacking wildlife habitat.
- *Fourth priority* – Stream channels with special designations, or high recreational or other values.

### Objective AQ3

Move all perennial, perennial interrupted and intermittent streams, and lentic areas (see glossary) toward Properly Functioning Condition (BLM Technical References 1737-15 and 16) and achieve distribution shown (Figure 2-1).

- Allow channels in properly functioning condition to evolve to potential natural condition (see glossary). If natural recovery processes take longer than the life of this plan, then stream channel, floodplain and lentic area management shall achieve “functioning at risk with an upward trend” within 10 years of signing of the Record of Decision.

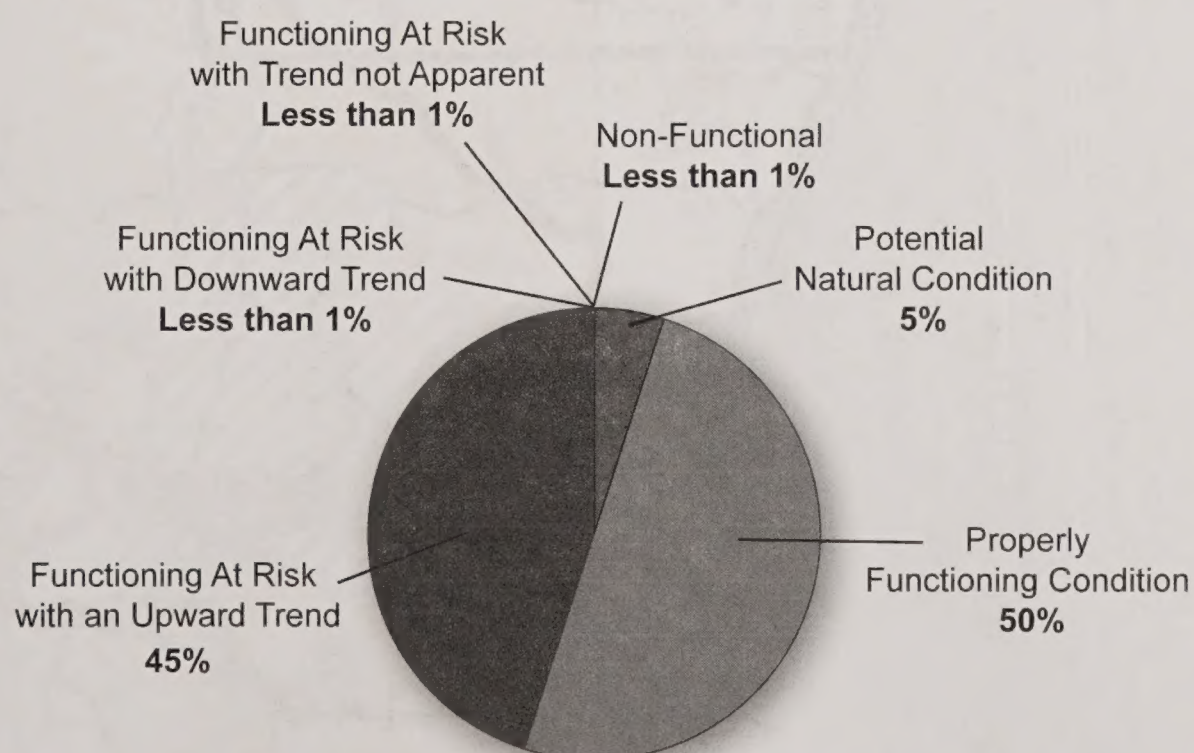
### Actions

- Conduct assessments for Proper Functioning Condition, using an ID Team that includes at least three specialists representing soils, vegetation, and hydrology resources. A fish biologist would be included in the ID Team when fish-bearing streams are being assessed.
- Physical function would be determined based on existing site capability and the ability of BLM to direct conditions to an upward trend. Because the BLM does not have reference sites for measuring “near natural rates of recovery,” the BLM defines the condition of Proper Functioning Condition or “at-risk with an upward trend” to be equal to “near natural rates of recovery.”

### Objective AQ4

Conserve and restore, within existing site capability and natural disturbance regimes, water quality to provide for beneficial uses and stable and productive riparian and aquatic ecosystems, and to meet state anti-degradation policy.

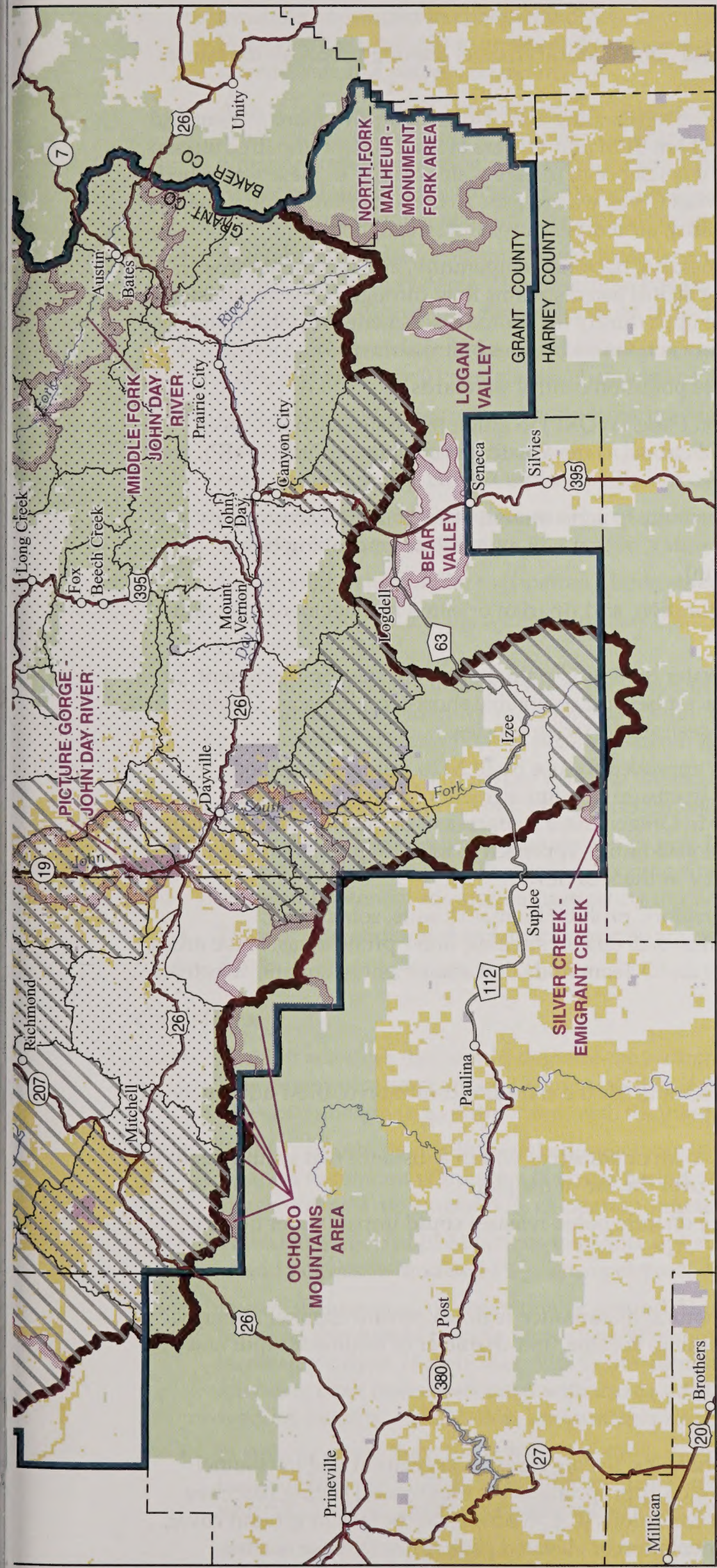
**Figure 2-1. Desired Distribution of Stream Conditions for the John Day River Basin over the Life of the John Day River Basin RMP.**











Map 6: Priority Watershed Assessments and Conservation Opportunity Areas

LEGEND

- Interior Columbia Basin Ecological Management Plan
- Prineville District BLM Subbasin Assessment for Priority Restoration
- Bonneville Power Administration Subbasin Assessment for Priority Restoration
- Oregon Department of Fish and Wildlife Conservation Opportunity Areas

- Planning Area Boundary
- Administered Land
  - Bureau of Land Management
  - Forest Service
  - John Day Fossil Beds National Monument
  - Other Federal
  - State
  - Private or Other

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Proposed Resource Management Plan  
Final Environmental Impact Statement

2012

Map 6: Priority Watershed Assessments and Conservation Opportunity Areas

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## Actions

- Design water quality restoration to complement and allow natural channel altering processes to restore channels and floodplains.
- Restore water quality for all 303(d) listed streams in the planning area. Utilize adaptive management and refine Best Management Practices in watersheds where BLM administers at least 20% of impaired stream miles. Focus research, intensive monitoring, and new science to restore water quality in these watersheds. Priority would be given to the Bridge Creek and Wall Creek watersheds. Actions to restore water quality should consider water temperature, relative humidity, air temperature, and stream flow.
- Address dissolved oxygen, pH, biocriteria (see glossary), bacteria, temperature, and sediment through total maximum daily loads (TMDLs). A number of 303(d) listed streams flow through lands administered by other entities. The TMDL strategy provides the opportunity for source assessment to appropriately assign load allocations and better inform restoration actions and causes of impairment.
- Meet state water quality standards and utilize state pollution control standards.
- Develop and implement Water Quality Restoration Plans (WQRP) to guide restoration actions, meet BLM's portion of the TMDLs, fit into a multi-jurisdictional Water Quality Management Plan (WMP), and restore water quality in the plan area.
- Participate in joint restoration efforts that will contribute to achievement of "excellent" water quality condition according to the Oregon Water Quality Index, or that will maintain an improving trend (<http://www.deq.state.or.us/lab/wqm/wqimain.htm>).
- Use riparian plantings, gentle stream channel restoration, and riparian oriented management to restore shade and natural channel geometry.
- Use fire and fire rehabilitation actions to restore water quality. Use fire to prevent stand replacement events that could degrade water quality and impact it beyond acceptable short-term impacts. Develop vegetation treatments in riparian areas to release desirable riparian species.
- Apply herbicides, pesticides, and other chemicals approved for use by BLM to restore watershed function, while using Best Management Practices to ensure non-impairment of water quality, soil productivity, or locally important fish. Participate in Oregon State Department of Environmental Quality Pesticide Stewardship Partnerships (a voluntary, collaborative approach to identify problems and improve water quality associated with pesticide use at the local level).
- Outside of existing Transportation and Utility Corridors, prohibit biomass plants, solar, wind, geothermal, and related transmission systems within 0.25 mile of streams, flood-prone areas, lentic areas, ponding, or playas unless a site-specific review by an ID Team finds that attainment of aquatic objectives will not be retarded or may be mitigated.

## Guidelines

- Support regional data management systems that account for the state and condition of BLM-administered lands and waters.
- Avoid introduction or use of chemical retardants, foam or additives within a distance that would result in delivery of harmful compounds to surface waters over the life of the plan.
- Prohibit storage of fuels and other toxicants where unanticipated releases could impair water quality.

## Objective AQ5

Conserve and restore, within existing site capability and natural disturbance regimes, stream channel integrity, channel processes, and sediment regimes (including the timing, volume, and character of sediment input and transport).

## Actions

- Where peak flows or erosion has incised stream channels, restore riparian vegetation and in-channel structure (e.g., large wood, vegetating point bars, etc.) appropriate to the biophysical setting (BpS; see Vegetation section). Across the watershed, correct conditions (e.g., roads, culverts, lack of ground cover, and other conditions) that contribute excess sedimentation or elevated peak flows to these reaches.



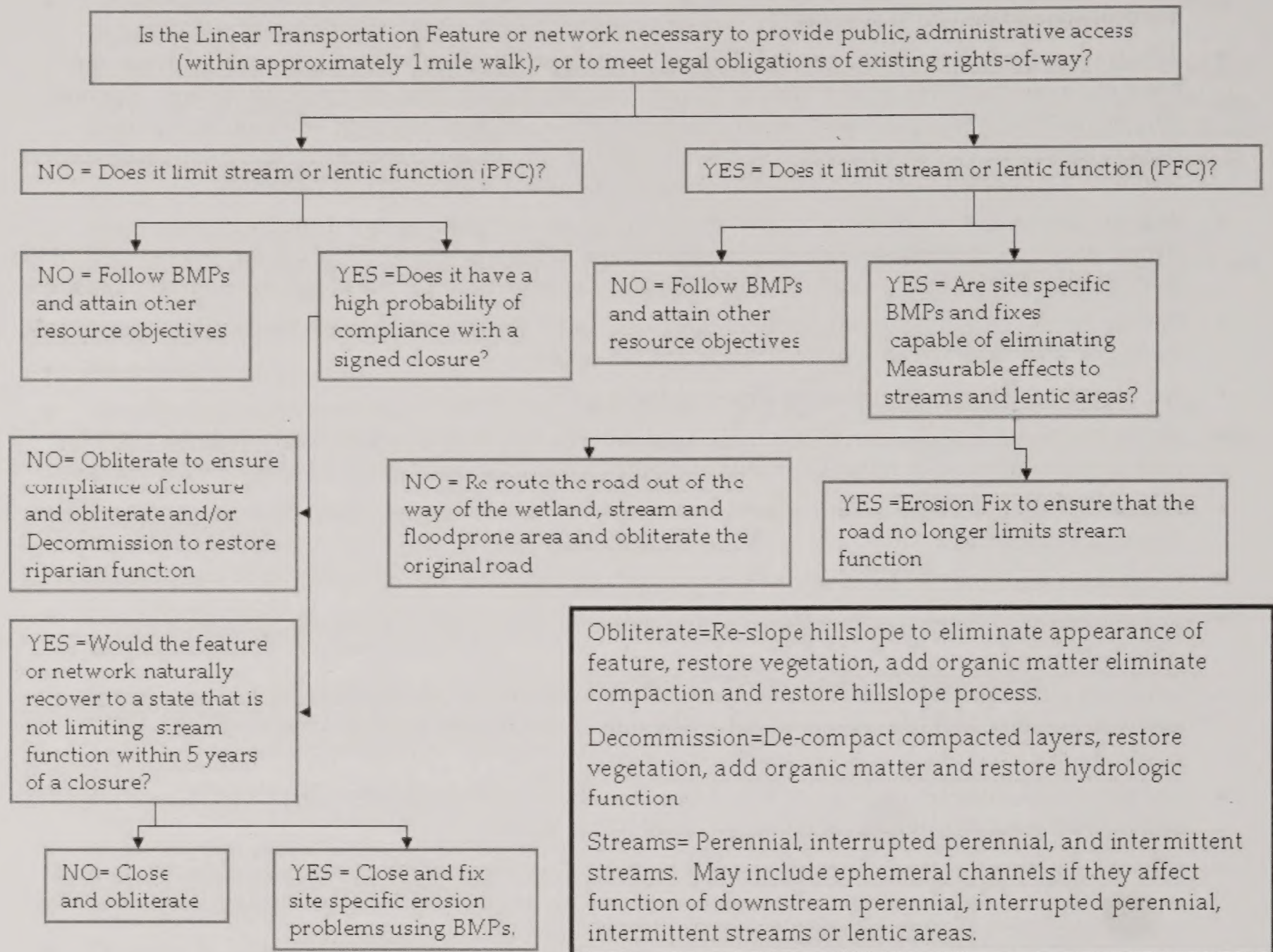
- Maintain vegetation in ephemeral draws appropriate to the ecology of the site. Apply Best Management Practices (Appendix B) to ephemeral drainages as necessary to attain objectives on downstream intermittent and perennial streams.
- Adjust management to restore vertical channel stability and stabilize headcuts. If passive restoration is not successful, actively restore vertical channel integrity by reducing stream power/energy. Evaluate whether active restoration will introduce less risk to resources than allowing the headcut to persist. Active restoration of headcuts might include (in order of preference) riparian revegetation, grade control, recontouring channel margins, channel re-design (including meandering), or hardening.
- Actively restore lateral channel integrity by stabilizing stream banks with a diversity of plants with strong, deep root systems. The amount of stream bank stabilized should allow natural erosion rates of the channel type. Restoration should focus on reducing erosion where it is out of balance with the landscape.
- Restore stream channel integrity, channel processes, and the sediment regime where facilities (e.g., roads, trails, and structures) cross stream channels and floodplains.
- Avoid new road construction within Riparian Management Areas.
- Avoid construction of new structures in the bankfull width of streams. Exceptions would be made for road improvements, culvert replacements and other actions that are prescribed to meet ACS objectives.
- Use cable, aerial, full suspension, or more protective logging techniques when harvesting timber within Riparian Management Areas.
- Locate skid trails parallel to Riparian Management Areas.
- Avoid locating skid trails within Riparian Management Areas (see ID Team requirement under Objective AQ2).
- Maintain and secure instream flows for values of channel function, floodplain function, aquatic habitat, and water quality. Identify and coordinate with federal, tribal, state, local governments and non-governmental organizations to secure instream flows.
- Use active restoration to reduce width to depth ratios by an average of 5-25% on BLM managed segments of the South Fork, North Fork, and main stem John Day Rivers.
- Where linear transportation features are or may be limiting perennial and intermittent stream channels or wetland function (e.g., Proper Functioning Condition), use the following decision tree to evaluate the cause and potential solution for mitigating impacts (Figure 2-2).
- Plans of operations and reclamation bonds are required for mineral operations in Riparian Management Areas.

### *Guidelines*

- Prohibit activities that would degrade the sediment regime of perennial, perennial interrupted or intermittent stream channels. Allow activities if the long-term intent of an activity is to restore stream physical function (e.g., juniper removal, thinning conifer encroachment, and other activities).
- Within each 6th field subwatershed, vegetation treatments would be limited to less than 10% of the total riparian vegetation within any one year period. As an exception, low intensity burns backing into riparian vegetation will not exceed 50% of riparian vegetation in 6th field watersheds.
- The combination of BLM actions to restore upland watershed conditions and other landowner activities would not risk (a modeled 1% chance per year) degrading sediment and flow regimes longer than 3 years.
- Ensure that removal of vegetation or ground disturbing activities do not exacerbate headcutting. Avoid activities that would remove more than 50% of the watershed cover and exacerbate headcutting by increasing runoff. If more than 50% of the watershed cover is removed, apply watershed mitigations to attenuate peak flows associated with increased runoff. Apply mitigation measures such as buffers, hydro-seeding, headcut stabilization, and wattles prior to fall precipitation (usually in October).
- In streams where the channel bank stability is degraded beyond a condition that natural erosion would create (e.g., cut-banks exist on straight riffle segments), redirect sources of disturbance (e.g., recreation, bedding, watering, trailing, and other disturbances) away from unstable stream banks or change management.



**Figure 2-2. Linear Feature Decision Tree for Aquatics.**



- For existing and planned linear features, landings, and temporary or permanent operating areas, ensure that operation and maintenance do not adversely affect streams.
- Avoid sediment delivery to streams by outsloping the road surface or by routing drainage away from the stream channel. In-slope roads with low traffic volume where the road footprint or underlying soil formation is very rocky, but not erodible or subject to failure.
- Avoid disruption of the hydrologic flow path when constructing facilities, roads, trails, ordering mining, and other activities.
- Renovate existing structures within the flood-prone width (see glossary) if they would not pass the 100-year flood and debris without degrading channel function. Prohibit new structures within the bankfull width of streams, except for new crossings and the renovation of old structures or crossings. All crossings and structures within the flood-prone width (see glossary) must meet stream standards, be removed, or be renovated to meet these stream standards:
  - Minimize stream channel and floodplain crossings by utilizing existing or by-pass routes.
  - Design or adjust to accommodate 100-year floods, sediment and movement of large wood with a natural geometry, slope, and bed stability.
  - Match bed gradation and D84 (see glossary) to the stream gradient according to the most recent stream simulation science ( such as "Designing for Aquatic Organism Passage at Road-Stream Crossings" 2005 course by San Dimas Technology Center).
  - Ensure that designs provide a stable stream bed both up and downstream of the site.
  - Construct and maintain to prevent diversion of flow out of the channel and down the road in the event of a crossing failure.



- Use ramped or low water fords at debris flow susceptible streams or any stream not requiring a culvert or bridge.
- Water velocities and depths, cover and resting areas shall be similar to the rest of the natural channel.
- Structures must be transparent to aquatic species. Structures include but are not limited to dams, poles, buildings, landings, houses, and docks.
- Use natural stream simulation techniques to maintain the channel and floodplain continuity. Streambed diversity and material would be similar to natural channel.
- Use vegetative buffer strips to prevent sediment associated with recreation sites and linear features (see BLM definition) from entering the stream channel or floodplain. Ensure that a vegetated buffer strip is sufficiently wide and dense to filter sediment and slow water velocity (14 feet minimum).
- Use a bridge for new stream crossings where stream bankfull width exceeds 20 feet, slope exceeds 6%, or where the movement of large debris is frequent. If visual objectives can be met, consider using a bridge for existing stream crossings where stream bankfull width exceeds 20 feet, slope exceeds 6%, or where the movement of large debris is frequent.
- Along the 400 feet of road on either side of a road or stream crossing, construct road crossing approaches with flat cut slopes (less than 1:2 slope) unless the cutslope is determined by a professional geotechnical engineer to be stable and not susceptible to erosion. Roads with steep side slopes usually have more soil accumulating in the road ditches than roads with less steep side slopes (Oregon Watershed Assessment Manual 1999).
- Prohibit construction of new facilities (e.g., roads, trails, pipelines, utility corridors, etc.) in RMAs, except at minimal crossings. Exceptions may be granted if it is proven that a facility would not retard attainment of Proper Functioning Condition or the 10 objectives of the Aquatic Conservation Strategy.
- Utilities would use existing crossings at stream channels, floodplains, and lentic areas (see also Table 2-14).
- At mineral lease sites, prohibit surface occupancy within perennial, interrupted perennial, intermittent, and ephemeral stream channels. Review and update plans of operation to eliminate impacts to stream channel integrity, natural sediment and natural flow regimes on a 5-year cycle.
- Prohibit new sand, gravel, and recreational mining and extraction within the flood-prone area (two times bankfull depth) and manage existing sites consistent with this objective of the Aquatic Conservation Strategy. As an exception, allow recreational mining at Dixie Creek and Standard Creek Area and along Canyon Creek in compliance with state regulations. Recreational mining sites must be spaced at least 100 feet apart, cannot use mechanized equipment, and must not disturb an area larger than the channel width squared. Sluice boxes are prohibited.

### **Objective AQ6**

Conserve and restore, within existing site capability and natural disturbance regimes, surface to groundwater interactions that support healthy riparian and wetland areas, aquatic habitats, and physical function of stream channels.

### **Actions**

- Use seeding, juniper removal, prescribed fire, wildland fire, weed removal, and other vegetation treatments designed to restore watershed cover and root structure that will facilitate capture, storage, and release of water into downstream areas of the watershed. Target phase II and III juniper invasion areas for treatment (see Vegetation section of this chapter for area covered, and the glossary for definitions of phase II and III juniper).
- In low energy (Rosgen C and E type, see glossary) channels such as Priest Hole, construct side channels, restore riparian vegetation, fence, remove berms, enhance flows, and develop other projects to restore off-channel habitat. Restoration should avoid capturing the main flows and reducing stream energy short of its potential.
- Use projects such as back-sloping, riparian planting, berm removal, and large wood introduction to restore floodplain connectivity. Natural channels should be in equilibrium with the water and sediment supplied by the watershed. Prohibit or re-direct uses that are in conflict with maintenance of wetlands, floodplains, and off-channel habitats. Restore flows necessary to maintain wetland and riparian function.



- Use native woody riparian plantings and weed treatment to ensure that riparian vegetation provides food and cover for existing and expanding beaver colonies. Reestablish cottonwood, aspen, and other woody riparian species with out-plantings, and secure genetic material at the nursery.
- Manage woody riparian species for unconstrained (released and unarrested) growth forms.
- Promote activities that allow beavers to colonize in riparian areas. Reinforce the purpose and necessity for various restoration actions through public outreach and education.
- Where stream characteristics limit sediment supply, rely on passive restoration unless cost-effective active restoration techniques are available. In stream channels with adequate sediment supply, use both active and passive restoration (e.g., mechanized construction, riparian plantings, plant removal, and other restoration) to recover the system.
- Conduct restoration work to reduce bankfull widths on BLM managed segments of the South Fork, North Fork, and main stem John Day Rivers by an average of 5% of the existing width.
- Restore compacted wet (hydric) soils. Conduct restoration when soils are not saturated.
- Use riparian planting, seeding, and mulching to facilitate revegetation of hydric soils. Use facultative (see glossary) upland species where needed around the boundary of riparian plantings and seedings (facultative, upland, and obligate species are defined by the 1998 USFWS Wetland Plants list for each region).
- Conduct prescribed burns, cut vegetation, and use stump applications of herbicide to remove undesirable species that delay or prevent attainment of Aquatic Conservation Strategy objectives.
- Perform watershed treatments for both short- and long-term recovery of sediment and flow regimes.
- Restore variable ranges in forest cover to maintain natural peak flows (see Vegetation section of this chapter).
- New livestock handling, livestock management, or livestock watering facilities would be located outside of Riparian Management Areas, except for those that inherently must be located in an RMA and those needed for resource protection.
- During allotment management planning consider removal of existing livestock handling or management facilities from Riparian Management Areas.
- Livestock trailing, bedding, loading, and other handling activities should be avoided in Riparian Management Areas.
- Locate troughs associated with spring developments and off-channel water on ground with a slope, vegetated buffer, and distance away from Riparian Management Areas to ensure that management of the area does not contribute sediment to or remove vegetation from hydric soils, riparian, or wetland areas. Fence developed spring areas to exclude livestock. Use an automatic shut-off or efficiently return overflow to the source in a short-return interval.

### **Guideline**

- Over the course of two years, forest cover treatments shall not result in more than 80% loss of forest cover in areas of less than 15 to 18 inches annual precipitation zone. This 80% change applies to cumulative activities across all ownerships of a watershed (HUC 5). Forest cover is considered areas with >50% canopy cover. Phased treatments are preferred. Achieve landscape appropriate peak flows during juniper watershed treatments by lopping and scattering of limbs or similar material (see Table 2-2).

### **Objective AQ7**

As necessary pursuant to state law, monitor and maintain water rights necessary to meet BLM management purposes and maintain beneficial uses.

### **Actions**

- Water rights on BLM-administered lands are held in, or transferred to, the name of the United States, Department of the Interior, BLM. The BLM will maintain all valid water rights, which would require inventory and cataloging of Public Water Reserve (PWR) #107 water rights for livestock and domestic water use and documentation of existing water rights over the life of the plan and beyond.



- By 2012, compile the history of use on BLM water rights and points of diversion. Voluntary relinquishment of mining water rights that are no longer valid will contribute to meeting instream flow goals. To maintain beneficial use of water rights, complete a change-of-use to instream use for each water right not used for their original purpose.
- Require rights-of-way to convey surface or ground water across BLM land, with the exception of off-channel water for livestock and wildlife beneficial uses that improve watershed condition and attain Aquatic Conservation Strategy objectives. The off-channel use and rights-of-way would include stipulations for management to achieve Proper Functioning Condition on associated stream reaches.
- Increase instream flows through cooperative efforts to lease water rights instream and improve irrigation efficiency. Apply Land and Water Conservation Funds to restore instream flows that support ecological and recreational resource values during periods of peak demand.
- For the North Fork John Day subbasin, acquire and maintain instream and other water rights necessary to support recreational fishing, canoeing, hiking, kayaking, swimming, white water rafting, big game hunting, obligate diverse wildlife assemblage, and anadromous fish and bull trout habitat throughout pertinent life cycles.
- Withdrawals of water from stream systems would be limited to those that do not contribute to degradation of fish and aquatic life. Cease water withdrawal from stream channels when stream flows drop below 10 cubic feet per second at Bridge Creek (USGS gauge 14046778), after August 15 on the main stem John Day River, and at similar instream flow goals for fish, recreation and pollution abatement in the plan area, such as ODFW minimum instream flow goals, State Scenic Waterway, or future BLM instream flow goals identified by the BLM. Withdrawals include, but are not limited to, irrigation of agricultural land for cultivation of agricultural crops, permanent conversion (see glossary), or wildlife food and cover plots; mining operations; and rangeland restoration.
  - Water may be withdrawn beyond the shut-off limits to restore perennial vegetation in floodplains when it is determined that the long term benefit to water quality and fish habitat restoration outweighs the short-term impacts and is consistent with the Endangered Species Act and Clean Water Act. Allowable uses include the establishment of perennial vegetation (see Vegetation Objectives) that will not require irrigation after establishment for the purposes of restoring riparian habitats and growing hardwood riparian stock for out-planting.
  - Withdrawals from Bridge Creek to irrigate for permanent conversion of agricultural fields would cease at 6 cubic feet per second (cfs).

### **Objective AQ8**

Conserve and restore, within existing site capability and natural disturbance regimes wetlands, lentic areas, and hydric soils.

- These areas have the soil and water to support facultative, wetland, and obligate species as defined by 1998 USFWS Wetlands Plant list for each region.

### **Actions**

- To achieve “near natural rates of recovery” appropriate for the ecoregion, vary management of lentic areas by physical function, as shown in Table 2-4.
- Relocate or close facilities that contribute to nonattainment of lentic Proper Functioning Condition (TR 1737-16).
- Use decision tree (Figure 2-2) for management of linear features.
- Restore over bank or seepage flows necessary to maintain lentic function.
- Maintain expected pH based on local geology.
- If the integrity of reservoirs or other structures near lentic areas is compromised or presents a resource or safety concern, include the site in the deferred or other facilities maintenance schedule.
- New construction of dams and reservoirs would be designed by a licensed professional engineer if the features exceed a height of 10 feet, 9.2 acre-feet, or state standards.



## Guidelines

- Locate ground-disturbing activities and facilities away from hydric soils and wetlands. Ground-altering activities should not degrade conditions beyond which 5 or more years are necessary to recover soil compaction and restore the local native vegetation and sediment regime.
- New structures, facilities, roads, trails, and leasable and salable mineral sites should be kept at a minimum in areas surrounding or characterized by hydric soils and otherwise should be prohibited in wetlands. New permits, rights-of-way, and easements would result in no net loss of lentic areas and avoid negative effects to hydric soils.
- Prohibit actions that compact hydric or wetland soils, reduce site potential vegetation and temperature moderation, and alter hydrology (e.g., infiltration, moisture regime, and other factors). Use plantings and manage for obligate, facultative, or wetland species on degraded sites.
- Redirect activities away from reservoirs, wetlands, lentic areas, and hydric soils when they degrade surface or subsurface flow patterns or hydric soils. Remove trespass livestock or change BLM grazing management that is causing facultative, wetland and obligate (see glossary) species in wetland/hydric soils to have unnatural growth forms.
- Avoid brushing along stream channels and floodplains. Brushing may be unavoidable if it is necessary for human safety or to avoid threats to structural stability. Do not brush beyond 4 feet of a road as measured by the edge of the drivable road surface (not measured from turnouts or road shoulder).
- Minimize expansion of the road prism within Riparian Management Areas by maintaining designed roadway width. Expansion into RMAs would be limited to that needed for public safety or to meet aquatic objectives.
- Design roads for minimum lanes (preferably single lanes) with turnouts; use slower speed limits; place turnouts away from riparian management areas, end hauling excess material; avoid side casting; and use Best Management Practices.

## Objective AQ9

Conserve and restore, within existing site capability and natural disturbance regimes, diversity and productivity of native riparian and aquatic plant communities.

## Actions

- Encourage native and nonnative plants in riparian zones for the long-term purpose of recovering native riparian and aquatic plant communities. See Vegetation section for related restoration actions.
- Actively restore a maximum cross-sectional area (width x height) of woody riparian vegetation. Focus active restoration of woody vegetation in lower gradient streams where the PFC inventory indicates the riparian vegetation has not achieved its potential extent (PFC Question #4; USDI Bureau of Land Management, Technical Reference 1737-15 and 11) and/or the stream lacks diverse age class distribution of riparian/wetland species (PFC Question #7). Where utilizing passive management, achieve a potential cross-sectional area of woody species by managing all riparian shrubs and trees for uninterrupted or released growth forms (Keigley and Frisina 1998).
- Restore diversity and productivity of native riparian and aquatic plant communities by thinning invading conifers from riparian areas as identified by an ID Team. Replant native hardwood riparian species appropriate to the site. Mechanical or other treatment of riparian vegetation should not reduce shade below a point where stream water temperature prohibits attainment of the beneficial uses for a stream reach. Use nomographs or similar tools to correlate shade to topography and tree species. Retain large wood on-site to meet objectives for large wood management (Appendix G), down wood (see Table 2-2 in the Vegetation section), and pool depth/frequency desired conditions (Appendix G). If the plant community's pipeline of standing and in-channel large wood, down wood, and pool depth/frequency is adequate to meet these objectives, wood may be made available for other uses (e.g., forest products and biomass generation).
- In cooperation with County weed boards and Soil and Water Conservation Districts (SWCD), target riparian areas for noxious weed vegetation treatment. Specifically address Russian olive, tamarisk, yellow star thistle, invasive thistles, and Dalmatian toadflax.



- Remove juniper where it has invaded stream channels, floodplains, and wetlands and where treatment by-products can be used for conversion to biofuels and contribute to commodity production.
- Plant cottonwood and aspen (*Populus* spp.) where current conditions are not meeting site potentials for these species.
- Manage activities, such as livestock grazing, to ensure that woody riparian species are not arrested or retrogressed in form. Change management of woody riparian species to correct for arrested and/or retrogressed growth forms and restore their potential stature.

### Objective AQ10

Conserve and restore, within existing site capability and natural disturbance regimes, riparian vegetation to provide the amount and distribution of large wood characteristic of aquatic and riparian ecosystems; provide adequate summer and winter thermal cover in riparian and aquatic zones; and achieve rates of surface erosion, streambed and stream bank stability, and channel migration characteristic of historic conditions.

### Actions

- Where large wood is lacking (generally in second growth or burned-over stands), replant large wood source trees within the distance of one site potential tree height of riparian areas (150 feet).
- Fell hazard trees within the distance of one site potential tree height (150 feet) from the flood-prone area of perennial, perennial intermittent, and ephemeral streams. Retain trees onsite for restoration.
- Restore riparian trees along streams with the potential for riparian vegetation to provide large wood. On larger meandering streams, replant cottonwoods on point bars and in alder stands to improve structural integrity of individuals on these sites. On smaller streams, where in-channel large wood is present, restore pool frequency in a manner that controls the progression of large wood through the stream network.
- Design stream crossings to pass large wood.
- Where point bars are not re-vegetating with riparian vegetation, restore flow, sediment regimes, and hydraulic connectivity that limit revegetation. Use active restoration such as reshaping and replanting of point bars and floodplains to achieve potential riparian vegetation.
- Manage woody riparian species to achieve natural growth forms and stature.
- In order to achieve “near natural rates of recovery” appropriate for the ecoregion, vary management of riparian areas by physical function, as shown in Table 2-4.

**Table 2-4. Management of Riparian Management Areas (RMAs) by Function Rating**

Function Rating	Management of Resource Uses (grazing, recreation, energy, etc.)
Properly Functioning Condition or at Potential Natural Condition	Continue management that will allow development of potential or late seral plant communities. Implement restoration actions to move site toward potential ARV by BpS (see vegetation section of this chapter).
Functioning-At-Risk with an upward trend	Limit use and implement management that maintains upward trend in streambank and channel characteristics.
Functioning-At-Risk with a static or downward trend	Change management contributing to static or downward trend by limiting season, duration, frequency and intensity of resource use (e.g., livestock grazing, recreation, and other uses). Allow complete recovery of stabilizing vegetation before fall rains begin to increase stream flow (approximately October 1). Consider complete rest from activity for a time specified by ID Team.
Non-Functioning	Eliminate management activities contributing to the Non-Functioning Rating.



### **Objective AQ11**

Conserve and restore, within existing site capability and natural disturbance regimes, riparian and aquatic habitats necessary for locally important fish stocks.

#### **Actions**

- Restore sediment in spawning incubation areas to be less than 10% fines in gravel and less than or equal to 12% surface fines (pers. comm. John Morris, BLM, May 2007).
- When erosion rates are elevated enough to degrade fish habitat, target phase III juniper invasion areas for treatment.
- Increase and maintain pools in all perennial, perennial interrupted, and intermittent streams.
- Use natural channel altering processes to restore stream channels and floodplains.
- Contribute to cooperative efforts to restore ESA listed fish populations and achieve TMDL load allocations and meet state water quality standards.
- Restore limiting factors identified in the 2005 BPA John Day Subbasin Plan and subsequent studies.
- Restore large wood to stream channels and floodplain habitat appropriate to the BpS (see vegetation section) by: (1) managing forest lands within one site potential tree height of stream channels (150 feet) and floodplains to maintain a source of large wood; (2) reintroducing large wood to stream channels and floodplains; and (3) retaining large wood in stream channels.
- Locate and manage water drafting sites to minimize adverse effects on stream channel stability, sedimentation, and in-stream flows needed to maintain riparian resources, channel conditions, and fish habitat.
- Screen pumps at drafting sites to prevent entrainment of fish and use one-way valves to prevent back-flow into streams.

#### **Guidelines**

- Achieve a 50% pool improvement in 3rd order streams lacking large wood.
- Allow natural channel altering processes to restore stream channels and floodplains.

### **Objective AQ12**

Conserve and restore, within existing site capability and natural disturbance regimes, habitat and connectivity to support the resilience of riparian-dependent biotic communities.

- Stream channel crossings shall generate velocities and sediment transport rates that are stable and safely pass all life stages of [native] aquatic organisms including, but not limited to, listed fish species existing or restorable, and meet the state and federal fish passage requirements.

#### **Actions**

- Maintain and restore corridors of riparian vegetation and reconnect flow in reaches with decreased stream flow.
- Restore vegetation necessary to support biotic communities that occur in the BpS (see vegetation section).
- Restore BLM managed perennial, perennial interrupted, and intermittent stream channel crossings in combination with the crossings of other landowners such that 90% of stream routes in each fifth field hydrologic unit (HUC; up to 250,000 acres) have crossings that accommodate the 100-year floods, and route sediment and large wood with a natural geometry, slope, and natural bed stability of the channel.
- Prohibit wind power and transmission systems within 0.25 mile of flood-prone area, lentic areas, ponding, or playas unless approved after a site-specific review by an ID Team. No surface occupancy (NSO) may be required if mitigation is not sufficient to achieve Aquatic Conservation Strategy objectives.



### **Guidelines**

- Retain 20% of the upland perimeter of lentic areas in vegetative species and structure needed for hiding cover, life cycle completion, and corridors of site riparian-dependent biotic community. This may translate into leaving areas untreated for fuels or other activities. The final delineation would be made by an ID Team.
- Do not allow stream crossings to create or maintain scour, headcuts, or deposition at levels not appropriate to the adjacent stream reaches.

### **Objective AQ13**

Conserve and restore, within existing site capability and natural disturbance regimes, high quality waters that serve as domestic water supplies.

### **Actions**

- Target treatment of phases II and III juniper invasion areas in order to improve infiltration for groundwater that supplies public and private domestic water use.
- Remove legacy mine sites and prohibit new mining in source water protection areas such as the Dixie Creek watershed.
- Prohibit storage of toxics in Source Water Protection Areas.
- Do not apply fire retardant, herbicides or other toxics near (apply more than 100 feet away from) domestic use water points of diversion or delivery systems.

### **Guidelines**

- Use Oregon source water assessments to inform decisions about source water protection. Participate in and provide resources for plan area source water protection plans at the local level.
- Do not allow the introduction of volatile organic compounds into domestic waters supplies.
- In drinking water protection areas, do not facilitate high risk uses (e.g., septic, sewage, highways, streets, high-density housing, agriculture, and intense silviculture).
- Prohibit use or storage of insecticides, pesticides and other toxicants within 500 feet of domestic water points-of-diversions and wells and within 100 feet of private or community domestic water points-of-diversion and wells.
  - Consider effects to community health when weighing risks associated with using retardant, pesticides, herbicides and other toxicants within 0.25 miles of private or community domestic water, points-of-diversions and wells.

## **Wildlife**

### **Management Common to All Alternatives**

#### **Objective W1**

Improve and maintain vegetative condition to benefit livestock and wildlife.

### **Actions**

- Wildlife escape devices would be installed and maintained in water troughs.
- Manage upland habitat for diversity to provide for a variety of wildlife.
- Maintain or improve habitat for threatened and endangered species.
- Maintain or improve winter range for deer and elk.
- Formal and informal consultation with the U.S. Fish and Wildlife Service would be initiated on all proposed actions that may affect any Federally listed or candidate threatened or endangered species. No activities would be permitted in threatened, endangered, or sensitive species habitat that would jeopardize the continued existence of such species.



- Design and implement management activities to be consistent with the BLM National Sage-Grouse Habitat Conservation Strategy; Guidance for the Management of Sagebrush Plant Communities for Sage-Grouse Conservation, November 2004 (USDI 2004), and consider management direction in the Greater Sage-Grouse Conservation Assessment and Strategy for Oregon: April 2011 (Hagen 2011) or more current adopted science or policy.

### **Guidelines**

- Design vegetation manipulation and revegetation projects in areas determined to be crucial to supporting federally listed, BLM sensitive, and locally important species' populations to meet species needs and create an overall mosaic of vegetation structures and conditions.
- Public land use by nonnative animals and/or feral livestock would not be authorized, and the BLM would support removal of these species by the use of BLM regulations and/or cooperation and coordination with the Oregon Department of Agriculture, ODFW, and private landowners.
- All new fences would be built to standard BLM wildlife specifications to allow wildlife passage, with the exception of fences built specifically to keep wild ungulates out of an area or fences built to meet specific public safety or other administrative purposes. Existing fences not meeting standard BLM wildlife specification would be modified to meet the standard when major reconstruction is done or as funding allows.

## **Management Common to All Action Alternatives**

### **Objective W2**

Maintain or improve habitats to support healthy, productive and diverse populations and communities of native plants and animals (including special status species, migratory bird Species of Concern, and species of local importance) appropriate to soil, climate, and landform. Where consistent with habitat capabilities, meet ODFW management objective numbers for deer, elk, and antelope.

Maintenance or improvement of habitats should consider habitat patch size, disturbance, quality and connectivity of habitats required to sustain wildlife. Provide effective wildlife habitat for individual species, groups of species, or habitats.

### **Actions**

- Manage vegetation to provide habitats for the appropriate associated wildlife species within the limits of ARV as defined in Vegetation Objective V3.
- Maintain or improve habitats using a variety of techniques, such as mowing vegetation, planned and unplanned fire, livestock grazing, commercial timber harvest, noncommercial tree cutting, planting, seeding, and water developments.
- Incorporate patch size and connectivity into project design as appropriate for the Biophysical Setting(s).
- Maintain or establish connectivity of sagebrush habitats at mid and fine scales to maintain, increase, or decrease the overstory as needed.
- Increase desirable big game browse species where appropriate.
- Reduce western juniper and shrub encroachment into rangeland sites that threaten Washington ground squirrel and sage-grouse habitats or populations.
- Establish green strips in order to diminish the chances for further loss of quality grassland or sagebrush habitats to wildland fire. This would especially be applicable to quality habitats that adjoin fire-prone, annual grass-dominated areas (e.g., cheatgrass).
- Retain current BLM administration of public lands within special status, migratory bird Species of Concern, or locally important species habitats in federal ownership, unless an exchange would be more beneficial to special status wildlife and/or locally important species (also see Lands and Realty Objective LR4).
- Management of habitat for migratory bird Species of Concern will emphasize avoidance or minimizing negative impacts and restoring and enhancing habitat quality. Through the permitting process for all land use authorizations, promote the maintenance and improvement of habitat quantity and quality.



## Guidelines

### General

- Wildlife populations would be allowed to expand naturally or through transplants in coordination with ODFW.
- The BLM will work with ODFW to meet future big game habitat demands during any change to game animal management objectives that are identified through ODFW's Management Objective setting process.
- Place high priority on activities that increase browse species in critical winter range.
- All practices and projects should avoid or minimize the possibility of the unintentional take of migratory birds. If the proposed project or action does have the potential to impact migratory bird species populations that have been identified as occurring within the project or action area, evaluate options to mitigate the project to minimize or eliminate the identified impacts during periods of concentrated nesting activity.
- Avoid, reduce or mitigate adverse impacts on the habitats of migratory bird Species of Concern to the extent feasible.
- To promote the maintenance and improvement of habitats for migratory bird Species of Concern, use applicable conservation actions and strategies consistent with regional or statewide bird conservation priorities (see glossary) where possible.

### Habitat Modification

- Areas disturbed during project activities would be seeded as directed in the Vegetation section of this chapter.
- Consider elk satisfactory cover, marginal cover (see glossary), and forage needs within geographically distinct winter or summer ranges when assessing spatial arrangements of treatments to meet ARV objectives.
  - Use topographic relief when designing vegetative treatments to provide cover from open roads or trails.
  - Prioritize cover retention between 100-550 yards of open roads and within 200 yards of forage or riparian areas, and gentle topography associated with calving areas.
  - Retain cover blocks in irregular shapes, 200 to 400 yards wide, with blocks of 250 acres or larger provided throughout forested winter and summer ranges.

### Structural Developments

- In suitable habitats, where important nesting structures are absent, consider installing nesting platforms, nest boxes, and other structures to improve habitat conditions for snag dependent species.
- Where natural springs exist and are developed, water troughs would be designed to accommodate use by wildlife and livestock. Additional requirements are addressed in the Aquatic Conservation Strategy (Aquatics Objective AQ8) in this chapter.
- Where pipelines are developed to deliver water more than two miles from an existing water source, the water system will be designed to provide water for wildlife between July and October.
- Guzzlers (structures that collect, store, and distribute rain water) would be installed only where they facilitate distribution of wildlife. Maintenance of existing guzzlers would receive priority over the development of new guzzlers, except when managing for special status species.
- To the maximum extent feasible, new guzzlers would be located away from existing designated trails to avoid the potential for seasonal trail closures or rerouting of trails.

### Disturbance Actions

- Utilize existing road and skid trail systems when not prohibitive by cost, access, or other RMP objectives.
- Close roads and skid trails where open road densities exceed those described in the Access and Transportation section of this chapter.
  - Items to consider for prioritization of roads to select for closure include but are not limited to the roads adjacent to special habitat features, areas >1,182 yards from an open road, cover blocks, riparian



areas (especially those at Proper Functioning Condition), and connectivity areas. Increase the spatial distribution of areas >1,182 yards from a road across the landscape.

- Limit new and reconstruction of roads or skid trails in or adjacent to the highest security habitat (graduated band distances from open roads as described in Rowland, 2005) available within one mile of a project. Additional avoidance considerations include those listed above for prioritization of road closure.
- During the development of management facilities (e.g., mineral sites, access roads, etc.) or infrastructure (e.g., trails), emphasize maintenance of relatively large unfragmented habitat patches. The term "relatively large unfragmented habitat patches" means the size of the patch in relation to the size of the BLM parcel(s) in the area; the goal is to minimize the amount of human disturbance of wildlife and human influence on the physical condition of the habitat.
- Rehabilitate big game winter range habitat degraded by wildland fire through seeding, alteration of livestock grazing or other methods as needed (see the Vegetation section, Rehabilitation and Restoration for additional direction).
- Manage important wildlife habitats to minimize human disturbance by maintaining seasonal closures throughout the sensitive period (see Table 2-5 for a list of species that may require seasonal restrictions, the restriction dates, and distance buffers).
- For nest or breeding sites, seasonal closures may be ended early if, through monitoring, the site is determined to be unoccupied. However, the closure period must include dates that will allow late nesting birds. Prior to disturbing activities, conduct surveys to determine presence/absence of special status species; allow the action to proceed if a field exam indicates that the nest is inactive.
- Continue seasonal wildlife closures in the Murderer's Creek cooperative travel management area and adjust seasonal dates to include bow hunting season.

### **Objective W3**

Provide security habitat that benefits deer, elk, antelope, and bighorn sheep during sensitive periods (winter, calving/fawning and hunting seasons). Wildlife habitat is a primary management consideration in these areas.

#### **Actions**

- Seasonal area closures for motorized use to protect wintering animals would be applied in elk winter crucial, mule deer winter concentration, bighorn yearlong and antelope winter ranges. The dates applied would be from December 1 to April 15, unless adjusted site specifically to meet coordinated resource management. These closures would be applied to all secondary and primitive roads that are under BLM jurisdiction within the seasonal closure area. Closure would generally not apply to county, state, or federally designated routes. Roads with seasonal closures are designated as Open Road Seasonally on Maps 12a-14f.

#### **Guidelines**

- Maintenance or improvement of existing security areas (> 1,182 yards from any open road) would be considered during planning for any management action.
- Group use restrictions may be applied in some areas or during some seasons.
- Roads and driveways that access private land and are not needed for general public access may be gated to limit use only to landowners. Consider building roads and driveways to the minimum standard necessary that allows reasonable access and has the least impact on wildlife resources possible.

### **Objective W4**

Facilitate the maintenance, restoration, and enhancement of bighorn sheep populations and habitat on public land.

#### **Actions**

- Pursue management in accordance with the 2003 *Oregon's Bighorn Sheep and Rocky Mountain Goat Management Plan* (OBSMP) in a manner consistent with the principles of multiple use management.



**Table 2-5. General Guidelines<sup>1</sup> for Seasonal Restriction and Distance Buffers**

Species	Habitat	Spatial Buffer	Restriction Dates
Bald eagle	Nest	0.25 mile non-line of sight, 0.5 mile line of sight, 1 mile for blasting	January 1–August 31
	Winter Roosts and Corridors	0.25 mile	October 1–April 30
Golden eagle	Nest	0.25 to 0.5 mile	February 1–August 31
Northern goshawk	Nest	0.25 mile	March 1–August 31
Peregrine falcon	Nest	1 mile	January 1–August 15
Prairie falcon	Nest	0.25 to 0.5 mile	March 15–August 15
Ferruginous hawk	Nest	0.5 mile direct line of sight, 0.25 mile with visual buffer	March 1–August 31
Swainson's hawk	Nest	0.25 to 0.5 mile	April 1–August 31
Flammulated owl	Nest	0.25 mile	April 1–September 30
Burrowing owl	Nest	0.25 mile	March 1–August 31
Great gray owl	Nest	0.25 mile	March 1–July 31
Sage-grouse	Lek (breeding)	0.6 mile	March 1–May 15
	Brooding and rearing	0.5 mile	April 1–July 31
	Nest	0.25 mile	
	Winter habitat	N/A	November 15–March 15
Mule deer	Winter range	N/A	December 1–April 15
Rocky mountain elk	Winter range	N/A	December 1–April 15
	Calving	N/A	May 15–June 30
Antelope	Winter range	N/A	December 1–April 15
Bighorn sheep	Occupied habitat	N/A	Yearlong
Long billed curlew	Nesting	N/A	March 15–May 30
Spotted bat	Roosting cliffs	0.25 mile	May 1–August 31
Cave-dwelling bats (Townsend's big-eared, Pallid, fringed myotis)	Hibernaculum	N/A	November 1–April 15
	Nursery	N/A	April 15–October 31

<sup>1</sup> These general guidelines are only examples of typical restrictions. Specific dates and distances may vary depending on the type of action proposed and the local breeding chronology of species or the local weather patterns.

- Improve poor quality habitat in identified historic range where needed to meet recovery or reintroduction objectives.
- If ODFW determines that excess animals are available, transplants out of the herds would be authorized.
- To protect California bighorn sheep, no new sheep or goat leases (domestic or nonnative) would be allowed in the future on BLM lands. Existing cattle or horse leases would not be converted to sheep (domestic or nonnative) leases on BLM lands, and any sheep leases that are relinquished would be converted to cow or horse leases.
- Non-renewable leases for sheep or goats would be allowed to achieve resource objectives when the risk of disease transmission is mitigated by the distance to occupied habitat, season of use, or other reasonable mitigating conditions as specified in the BLM's *Revised Guidelines for Management of Domestic Sheep and Goats in Native Wild Sheep Habitats* (1998).



## Guidelines

- Coordinate with ODFW on population management of bighorn sheep. Transplants, reintroductions, and natural expansion of bighorn sheep would be allowed. Plan bighorn sheep occupancy outside of domestic sheep use areas to avoid conflicts associated with disease transmission.
- Where needed, manage juniper density on occupied bighorn sheep range to maintain suitable habitat.

## Objective W5

Conserve federally listed species and the ecosystems on which they depend (BLM Manual 6840, p. 0.1). Ensure that actions requiring authorization or approval by the BLM are consistent with the conservation needs of special status species and do not contribute to the need to list any special status species under provisions of the ESA, or designate additional special status species under provisions of BLM Manual 6840.

## Actions

- Special status species will continue to be identified according to BLM Manual 6840 and BLM OR/WA 6840 policy and criteria in IM-OR-2007-072 or subsequent IM updates. See Appendix H for the current list of Special Status Wildlife.
- Design and implement management activities to be consistent with the BLM National Sage Grouse Habitat Conservation Strategy and Guidance for the Management of Sagebrush Plant Communities for Sage Grouse Conservation, November 2004 (USDI 2004). Pursuant to 40 CFR §1502.21, the BLM hereby incorporates by reference certain portions of the Greater Sage-Grouse Conservation Assessment and Strategy for Oregon: April 2011 (Hagen 2011) as management direction as summarized in Appendix W.
- Management activities in the habitat of federally listed, candidate threatened or endangered species would maintain or improve habitat conditions and/or not prevent or retard attainment of future desirable habitat conditions.
- Evaluate all projects for their effects to special status species and their habitats when authorizing activities. Conduct an assessment of the wildlife resources. The assessment should be commensurate to the level of anticipated impacts and include consideration of:
  - Species and/or habitat presence.
    - Review wildlife observations databases, available vegetation data sets, and/or conduct field surveys during appropriate seasons. In situations where data are insufficient to make an assessment of proposed actions, surveys of potential habitats would be completed prior to action being taken, or presence will be assumed.
  - Determination of project effects including discussion of consistency with applicable recovery plans, conservation assessments and strategies, and other appropriate documents.
  - Necessary mitigation measures and habitat enhancement opportunities.
- As appropriate, adjust clearances and mitigation requirements to all ongoing or planned projects when new information becomes available for populations, habitats, or special status listing.
  - Include the following or similar contract specification: "The Government may direct the Contractor to discontinue all operations in the event that listed or proposed threatened or endangered plants or animals protected under the Endangered Species Act of 1973, as amended, or Federal candidate, sensitive or state listed species, identified under BLM Manual 6840, are discovered to be present in or adjacent to the project area. Actions taken under this paragraph shall be subject to the Suspension of Work clause in Section I, FAR 52.242-14."
- Formal and informal consultation with the U.S. Fish and Wildlife Service will be initiated on all proposed actions that may affect any federally listed or candidate threatened or endangered species.
- In coordination with the U.S. Fish and Wildlife Service (USFWS) and ODFW, determine whether habitat conditions exist to allow the successful reintroduction of locally or regionally extirpated species such as Columbian sharp-tailed grouse. Determine whether habitat improvements, if any, are needed to create suitable habitat for reintroductions.
- Enhance health of roost and nest trees by reducing competing vegetation.
- Enhance conditions for future large perch/nest trees.



## Guidelines

- Take action to determine the distribution, abundance, and management needs of special status species occurring on BLM-administered lands.
  - Document observations of special status species.
  - Survey for special status bat species and assess habitat potential within all caves and identify which caves (if any) contain potentially suitable habitat for bats (especially Townsend's big-eared bat).
- Conduct periodic surveys of potential raptor habitats and monitor active and historic sites to determine occupancy and management consistency.
- Design or redesign travel routes to contribute to the long-term conservation of special status species.
- Balance the need for restorative actions to address long-term threats to special status species with the short-term need to protect special status species and their habitats.
- Individual species requirements would be included in management prescriptions but not to an extent that overemphasizes the value of any one habitat.
- Develop a Site Management Plan (see glossary) when programmatic direction is insufficient to protect an individual site or population.
- Protect special status species and habitats through activity buffers and seasonal restrictions including those described in Objective W2 and Table 2-5.
- Management to meet long-billed curlew and Washington ground squirrel habitat needs in the Horn Butte ACEC would include the following:
  - Use grazing, prescribed fire, or mechanical means (excluding heavy machinery) to manage grass stubble heights at <3.94 inches tall in or adjacent to identified long-billed curlew nesting habitat during the reproductive season 3/15–5/30.
  - Seasonally restrict grazing within the Hi Meadow (#2644) and Horn Butte (#2571) allotments between 4/15 and 8/15.
  - Manage sagebrush densities within or adjacent to identified long-billed curlew nesting habitat at <10% canopy cover.
  - Avoid ground-compacting activities, especially in drainages and the Fourmile area.

## Objective W6

Protect and restore special habitat features. These special habitat features include caves, cliffs, playas, riparian areas and wetlands, foraging areas, snags, and down wood.

- Special habitat features are often limited across the landscape, and thus are more important to those species that depend upon those features for some portion of their life cycle than more abundant features of the landscape. The special habitat features described here were identified as critical to the long-term conservation of a variety of species in *Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin* (USDA & USDI, 2000a), the *Assessment of Ecosystem Components* (USDA & USDI, 1997, p. 64, modified), and the BLM Learning Network.

## Actions

- Maintain and/or recruit adequate numbers, species and sizes of snags and levels of downed wood to contribute meaningfully to the needs of wildlife, invertebrates, fungi, bryophytes, saprophytes, lichens, other organisms, long-term soil productivity, nutrient cycling, carbon cycles and other ecosystem processes. (See also the Vegetation section of this chapter.)
- Also see specific management direction in the Cave Resources section.
- Allow dead tree removal for safety reasons or after fire if snag and down log requirements listed in Tables 2-2 and 2-6 are met.
- Management actions to maintain, enhance, or create special habitat features include digging or blasting ponds, spring developments, developing springs, closing or rerouting roads or trails, placing down wood, and creating snags.



## Guidelines

- Avoid special habitat features (nests, cavities, etc.) when authorizing activities. If avoidance is not possible, provide reasonable mitigation by reducing, restoring or compensating for important special habitats that are altered by management actions such as mineral material mining, road construction, etc. See Table 2-5 and associated guidelines for distance buffers and seasonal restrictions.
- Except where public safety is a concern, forest and woodland management activities would retain an adequate number of snags and large down wood in treatment areas based on forest type and seral stage.
  - Retain all soft snags.
  - Retain scattered hard snags and large live trees, and where available leave in clumps. Avoid leaving snags within 300 feet of open roads, and within one tree length of skid trails, skyline corridors, and improvements.
  - Trees retained for current and future snags and as "legacy trees" would be chosen from the largest trees available. Species that remain standing longer are priority for retention in the following order: ponderosa pine, Douglas-fir, Western larch, white/grand fir, and lodgepole pine as appropriate for the site potential and BpS.
  - Minimum snag density retention amounts in treatment areas are shown in Table 2-6 (Johnson and O'Neil 2001, Chapter 24, p. 596, Tables 1, 2, and 3). Large snag requirements are included in total snag requirements. Minimum snag densities and large snag requirements may be revised with updated science.

**Table 2-6. Minimum Snag<sup>1</sup> Densities for Managed Stands**

Forest type	Middle-Successional Stage		Late-Successional Stage	
	Total snags/acre	Large snags/acre <sup>2</sup>	Total snags/acre	Large snags/acre
Western juniper	0.6	0.2	0.3	0.1
Ponderosa pine	2.0	1.1	2.1	0.6
Mixed conifer	8.7	1.7	8.4	3.2
Lodgepole pine	11.2	0.9	8.0	0.5

<sup>1</sup> Snags are ≥ 10 inches dbh and ≥ 6.6 feet tall

<sup>2</sup> Large snags ≥ 19.7 inches dbh and ≥ 6.6 feet tall

- Snags of all decay classes count toward the minimum density standards; however, > 50% will be in decay class 1 and 2 (Johnson and O'Neil, 2001, Chapter 24, p. 580, Figure 3).
- Appendix S provides guidelines for determining the amount of area to exclude from salvage logging after high severity disturbance to meet snag retention objectives. Snag densities in Table 2-6 would be retained on salvaged acres.
- Where snag densities are below the established, desired range, initiate management activities to increase snag levels (USDA-BLM and USDI-BLM, 2000a, p. 48).
- To the extent compatible with reforestation objectives, fire hazard reduction standards, and public safety/trail use, large down wood would be retained in amounts that are appropriate for the plant community (see down wood table [Table 2-2 in Vegetation section]).
- Large down wood would be left in place across treatment areas rather than piled and burned unless precluded for safety reasons (see the Fire and Fuels sections).

## Disturbance actions

- Mineral material mining may be allowed on cliffs or talus slopes not occupied by special status species provided that special habitat features are provided in appropriate amounts and arrangements across the landscape to support species needs.
- Minimize activities that could adversely influence wildlife use of special habitat features by using one or more techniques appropriate to the species' needs and status. These techniques may include: seasonal restrictions, distance buffers, signs, closures, and relocating disturbance (i.e., moving trails, etc.).



## Wild Horses

### Management Common to All Alternatives

#### Objective HB1

Manage the Murderer's Creek wild horse herd in a manner that sustains a healthy and genetically viable population that is in an ecological balance with other resources and resource uses.

#### Actions

- Continue to manage the Murderer's Creek wild horse herd jointly with the Malheur National Forest under the guidance of the Murderer's Creek Wild Horse Territory/Horse Management Area (HMA) Management Plan (October 2007 or current version). Approximately 75 percent of the HMA is National Forest land and the remaining 25 percent is managed by BLM.
  - Continue to manage for a herd size or appropriate management level (AML) of 50–140 horses.

#### Guidelines

- Use the following criteria when considering adjustments in herd size:
  - Extraordinary circumstances such as wildland fire, extreme drought, disease, or circumstances warranting quarantine may require the removal of animals to maintain animal health or an ecological balance with the available habitat.
  - Excess animals may require removal to comply with court orders.
  - If wild horses stray outside of their designated boundaries (the herd management area) and the landowner requests their removal, remove them as required by law.
  - When concentrations of horses result in unacceptable impacts on resources, such as riparian areas, remove small groups of horses.
  - When population levels surpass the upper end of Appropriate Management Level, schedule gather activities and remove excess horses. The number of horses removed would be those necessary to bring the population down to the lower end of the AML range.
- Fertility control measures such as the use of the drug porcine zona pellucida can be used to control rate of population increase.
- Gather and remove excess horses as described in the Murderer's Creek Wild Horse Territory/HMA Management Plan (October 2007 or current version) using approved techniques such as helicopter drive trapping, horseback herding to a trap, roping, bait trapping, chemical capture, or net gun capture.
- Determine herd health, habitat condition, and herd size through habitat monitoring and pre- and post-gather censuses.
- Coordinate with local, state, federal and private organizations to maintain ecological values.

## Lands with Wilderness Characteristics

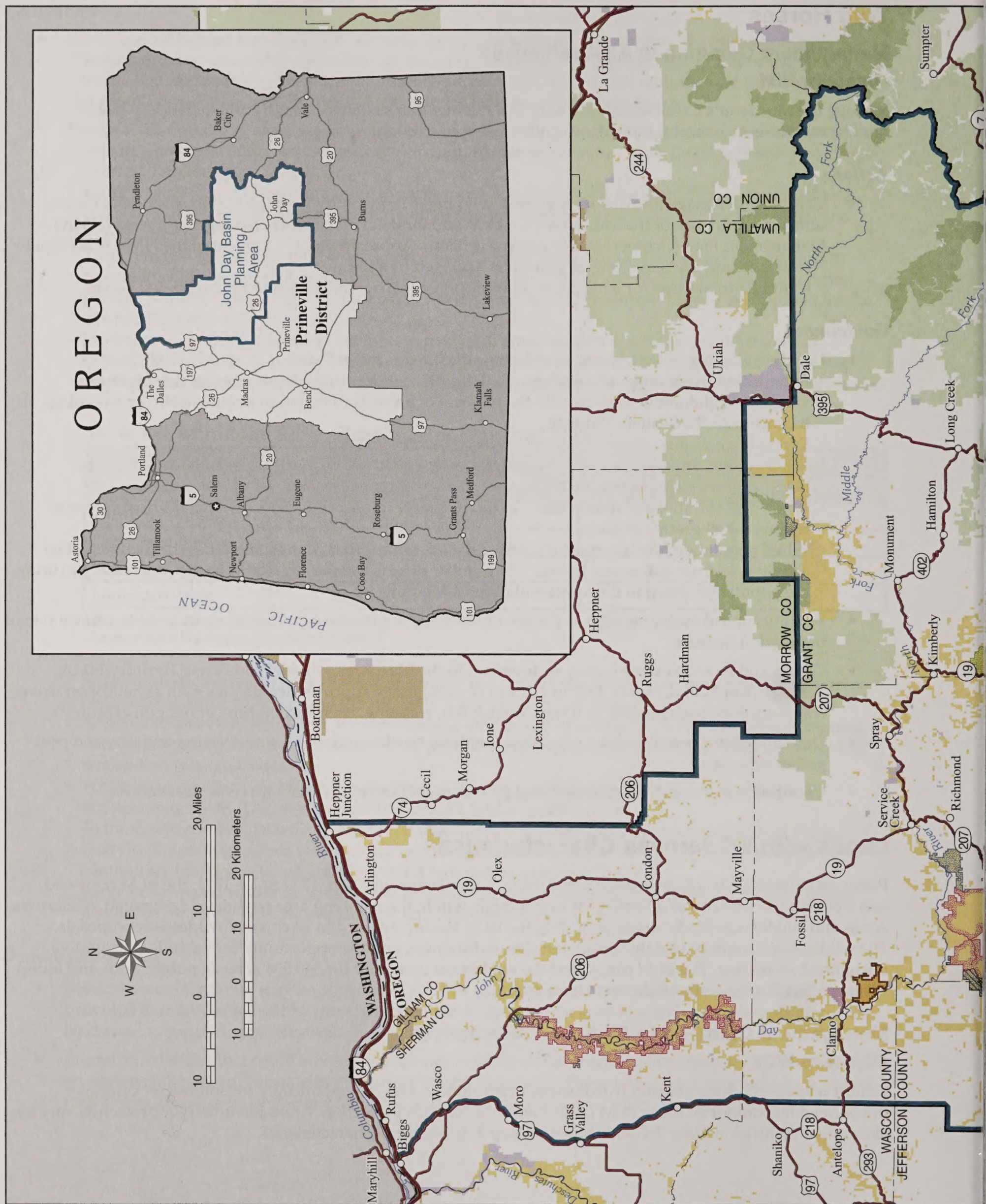
Pursuant to Section 201 of the Federal Land Policy and management Act, 43 U.S.C. § 1711, the BLM reviewed and updated the wilderness inventory of public lands within the planning area outside of designated Wilderness Areas and Wilderness Study Areas, including the BLM lands contained in 13 citizens' wilderness proposals. The wilderness inventory update considered size, naturalness, and the opportunity for solitude or primitive unconfined recreation. The BLM completed the wilderness inventory for 360,534 acres of public lands and found a total of 35,457 acres with wilderness characteristics.

### Management Common to All Action Alternatives

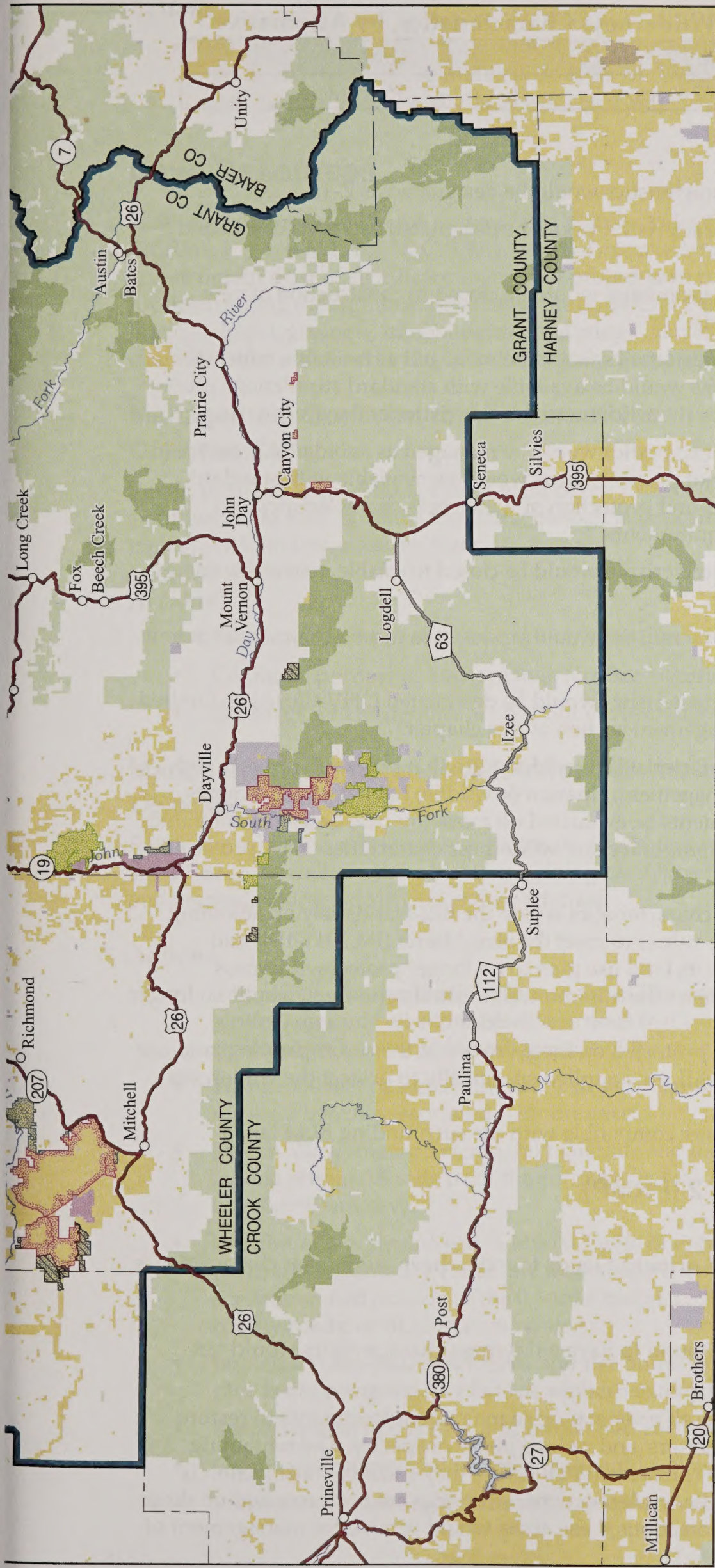
#### Objective WC1

Protect wilderness characteristics (roadlessness, naturalness, and the opportunity for solitude or primitive unconfined recreation) on those BLM lands identified for such protection. Areas identified for protection vary by alternative, as listed in Table 2-7 and shown in Map 7: Wilderness Characteristics.














## LEGEND

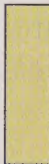
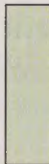
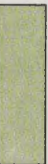

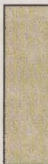
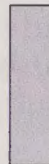

### Area to be Managed to Protect Wilderness Characteristics

-  Alternatives 2-5
-  Alternative 4
-  Alternative 2, Mechanical Vegetation Treatments Allowed
-  Wilderness Study Area
-  Spring Basin Wilderness Area

### Planning Area Boundary



### Administered Land

-  Bureau of Land Management
-  Forest Service
-  Forest Service Roadless Area
-  John Day Fossil Beds National Monument
-  Other Federal
-  State
-  Private or Other

U.S. DEPARTMENT OF THE INTERIOR  
Bureau of Land Management



## PRINEVILLE DISTRICT

### John Day Basin Proposed Resource Management Plan Final Environmental Impact Statement

2012

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Map 7: Wilderness Characteristics



**Table 2-7. Acres Identified for Protection of Wilderness Characteristics, by Alternative.**

Alternative 1	Alternatives 2, 3, and 5	Alternative 4
0 acres	19,442 acres	35,457 acres

**Actions**

- Areas identified for protection of wilderness characteristics would be designated as Z-1.
- Areas identified for protection of wilderness characteristics would be designated as VRM Class II and rights-of-way exclusion areas.
- Areas identified for protection of wilderness characteristics would be closed to construction of new buildings and new temporary or permanent roads.
- Areas identified for protection of wilderness characteristics would be managed as locatable mineral avoidance areas. If avoidance is not possible, areas would be available with standard stipulations plus subject to a site-specific analysis and protection of the wilderness characteristics of the area.
- Areas identified for protection of wilderness characteristics would be managed as avoidance areas for leasable and geothermal energy. If avoidance is not possible, areas would be available with standard stipulations plus subject to a site-specific analysis and protection of wilderness characteristics and managed under no surface occupancy (NSO) requirements.
- Areas identified for protection of wilderness characteristics would be closed to salable, renewable energy, communication sites, facilities, and rights-of-way.
- Areas identified for protection of wilderness characteristics would be closed to certain commercial permits (e.g., forest products and decorative stone sales).
- Areas identified for protection of wilderness characteristics would be designated OHV Closed or Limited to designated routes as shown in the OHV Management section of this chapter.
- Areas identified for protection of wilderness characteristics would require that proposed projects and uses such as fuels treatments, noxious weed management, riparian or wildlife habitat improvements, wild horse management and livestock improvements be evaluated on a case-by-case basis to ensure that any reductions in wilderness characteristics are temporary and wilderness characteristics are protected over the long term.
- For areas identified for protection of wilderness characteristics where the BLM lands rely on adjoining federal lands being managed to protect the same values to meet the size criteria (IM 2011-154) and the agency managing the adjoining lands revises its land use plan to no longer protect wilderness characteristics, the BLM lands would no longer meet the minimum size criteria and thus, would no longer possess wilderness characteristics.
  - Wilderness characteristics would no longer be protected on these areas and the accompanying land use plan allocations (Right-of-way, Exclusion, VRM II, etc.) applied specifically to protect the wilderness characteristics would be dropped, and
  - These lands would then be managed in a manner compatible with the surrounding BLM lands.

**Management Actions Specific to Alternative 2 (PRMP)****Objective WC2**

Protect wilderness characteristics on 19,442 acres of BLM managed lands found to have wilderness characteristics, as shown on Map 7.

Wilderness characteristics on the remaining 16,015 acres found to have wilderness characteristics would not receive special protections for the following reasons:

There are 15,840 acres that require multiple or aggressive vegetation management treatments to restore ecological processes, promote important wildlife habitats, and reduce invasive species. The remaining 175 acres are within an existing utility right-of-way corridor and all future major utility construction is identified to occur within this existing corridor. While wilderness characteristics are not protected on these areas, Table 4-19 in Chapter 4 shows the types of protections these areas would receive for management of other resource values.



**Actions**

- Allow mechanical vegetation treatment consistent with VRM II on up to 40 percent of the areas possessing wilderness characteristics for the purpose of maintaining or restoring ecological condition and long term wilderness characteristics (see Map 7).

**Cave Resources**

Existing guidance outside the scope of this plan includes the Federal Cave Resources Protection Act of 1988 (FCRPA; P.L. 100-691; 16 U.S.C. 4301), which directs federal agencies to inventory reported cave locations, prepare and maintain a list of significant caves, and protect cave resources determined to be significant. Procedures for determining the significance of caves are in 43 CFR Part 37. Significance is determined based on criteria for biotic, cultural, geologic, mineralogical, hydrologic, recreational, educational, or scientific values, features, or characteristics as defined in 36 CFR, Part 290.3 (c) and (d).

**Management Common to All Alternatives****Objective CR1**

Retain the natural condition of significant caves. Protect cave resource values including those contributing to significance, as well as others including biological deposits (e.g., middens and skeletal remains) and threatened, endangered, and/or sensitive plants or animals.

**Actions**

- Permit recreational and other human activities consistent with protecting cave resource values.
- Conduct appropriate surveys to determine significance of all newly identified caves.
- For caves where significance has not yet been determined, protect all values.

**Management Common to All Action Alternatives****Objective CR2**

Retain the natural condition of significant caves. Protect cave resource values including those contributing to significance, as well as others including biological deposits (e.g., middens and skeletal remains) and threatened, endangered, and/or sensitive plants or animals.

**Actions**

- Complete a site-specific Cave Management Plan for all significant caves. Until a Cave Management Plan is written, preclude all administrative actions that would cause changes to the microclimate, visibility, physical structure, or amount of recreational use of the cave area within 0.25 mile of any opening or entrance.
- Within 350 feet of significant caves, design vegetation treatments to provide seclusion, shading, and other resource benefits associated with the cave.
- Do not allow mining for mineral materials and locatable minerals or surface occupancy for fluid mineral leasing within 0.5 mile from the entrance and 0.5 mile on each side of the centerline along the length of any significant cave.
- Prohibit new rights-of-way within 0.5 mile of entrance(s) to any significant cave unless no other reasonable alternative routes are available. Where a new right-of-way cannot be reasonably accommodated outside of the 0.5-mile buffer, consider locating first along existing utility corridors, county roads, or BLM system roads.
- Implement seasonal restrictions and use buffers specified in Table 2-5 until a survey confirms that the cave is not being used by bats as a hibernaculum (see glossary) or nursery.
- Restrict access in significant or nominated caves to foot travel only.
- Group and commercial use of caves would follow direction from the recreation section of this chapter.
- Prohibit the following actions in significant caves:



- Willfully defacing, removing, or destroying plants or their parts, soils, rocks, minerals, or other cave resources.
- Drawing, painting, or otherwise adding any graphic elements to any cave surface.
- Smoking.
- Possessing, discharging, or using any kind of fireworks or other pyrotechnic devices.
- Possessing a domestic animal.
- Depositing or disposing of human waste.
- Digging, excavation, or displacement of natural and/or cultural features.
- Building, maintaining, tending, or using any fire, campfire, or stove.
- Camping or overnight use.
- Mountain bike, horse, or motor vehicle use.
- Use of chalk or hand drying agents for climbing that are not natural appearing.
- Geocaching.
- Possession and use of alcoholic beverages as defined by state law.
- Use of glass containers.
- Possession and use of paintball guns.
- Firearm discharge.

## Visual Resources

### Management Common to All Alternatives

#### Objective VR1

Maintain the scenic quality of river canyons, open space landscapes, cultural landscapes, and other areas having high quality visual resources. Manage visual resource values in accordance with Visual Resource Management (VRM) objectives:

- Preserve the existing character of VRM Class I landscapes (Wilderness and Wilderness Study Areas). This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and should not attract attention.
- Retain the existing character (low change) of VRM Class II landscapes (WSR segments, most non-designated segments of the river, and portions of some tributaries). Management activities in VRM Class II may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
- Partially retain the existing character of VRM Class III landscapes (moderate level of change). VRM Class III allows management activities that may attract attention, but their results should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
- VRM Class IV allows management activities that may require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. Management activities may dominate the view and be the major focus of viewer attention. However, attempts should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements of the landscape.

#### Actions

- Before initiating or permitting any major surface-disturbing activities on public land, the BLM would complete an analysis using the Visual Contrast Rating Process to determine adverse effects on visual qualities.
- Do not permit activities that would result in significant, long-term, adverse effects on the visual resources of the John Day River Canyons in areas normally seen from these rivers.
- All BLM resource uses, management activities, and other implementation decisions would meet VRM objectives and be consistent with VRM classifications. Visual resource design techniques and Best



Management Practices would be utilized to mitigate short-term and long-term impacts within VRM Class objectives [43 U.S.C. 1701, Section 102 (a) (8)].

- Maintain the scenic beauty, open space landscapes, and other high-quality visual resources within the planning area. Generally maintain the existing "footprint" of cultural landscapes (facilities, projects, and improvements) [43 U.S.C. 4321, Section 101 (b)].
- Existing level of road maintenance may be continued, but any road improvements or realignments are required to conform to the VRM classification.
- Manage existing recreation developments located in Wild and Scenic River segments with a VRM Class II designation, as VRM Class III "islands." New recreational development under this plan would be required to meet VRM Class III standards.

## Management Common to All Action Alternatives

### Objective VR2

Maintain the scenic quality of river canyons, open space landscapes, cultural landscapes, and other areas having high quality visual resources. Manage visual resource values in accordance with VRM class objectives (as described in detail under Management Common to All Alternatives, above).

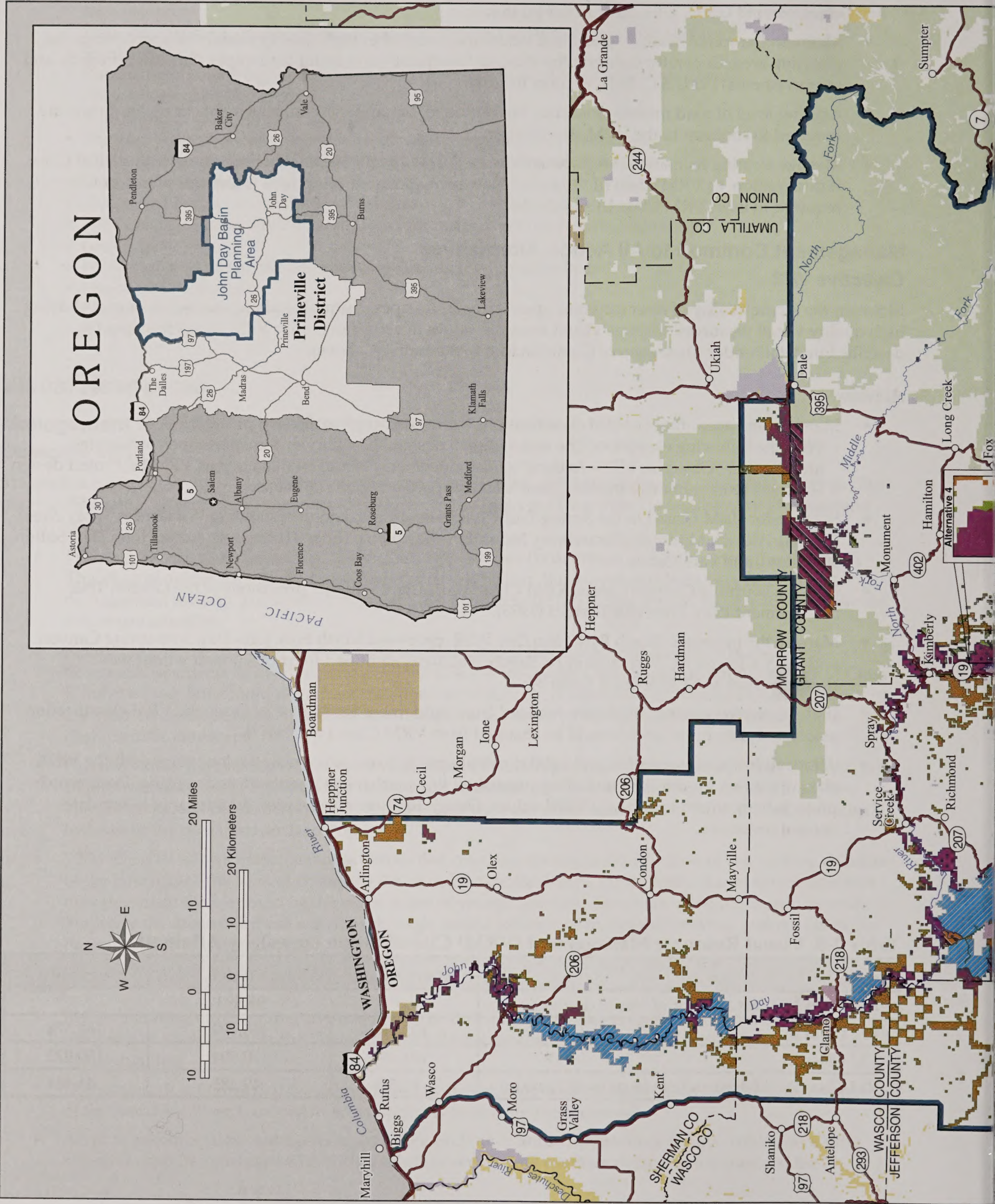
### Actions

- Manage land according to VRM classifications shown on Map 8 and listed in Table 2-8.
  - With the following exception: The area within a designated utility or transportation corridor (as identified in "Objective LR2—Actions" of this document) would be managed as VRM IV. Project design elements must minimize the long term visual impacts to public land users.
- Manage for VRM Class I in the Spring Basin Wilderness Area, and the following Wilderness Study Areas (WSAs): Aldrich Mountain, Strawberry Mountain, North Pole Ridge, Thirtymile, Lower John Day, Sutton Mountain, and Pat's Cabin.
- Manage Fourmile Canyon tract as VRM Class II consistent with the provisions of the Oregon Trail Management Plan: Prineville District (1993).
- Manage the proposed North Fork John Day WSR; proposed North Fork John Day, Armstrong Canyon, and Ferry Canyon ACECs; most of JV Ranch; and areas identified for protection of wilderness characteristics as VRM Class II (Map 8).
- In the event the existing WSAs are released from Wilderness Study by Congress, the VRM classification associated with those lands would be changed from VRM Class I to Class II.
- Allow all forms of vegetation and habitat management, if consistent over the long term with the VRM class objectives for the area, including prescribed fire, mechanical treatment, and seeding. Design such projects to maintain or enhance VRM values. Design long-term vegetation maintenance to emulate natural processes.

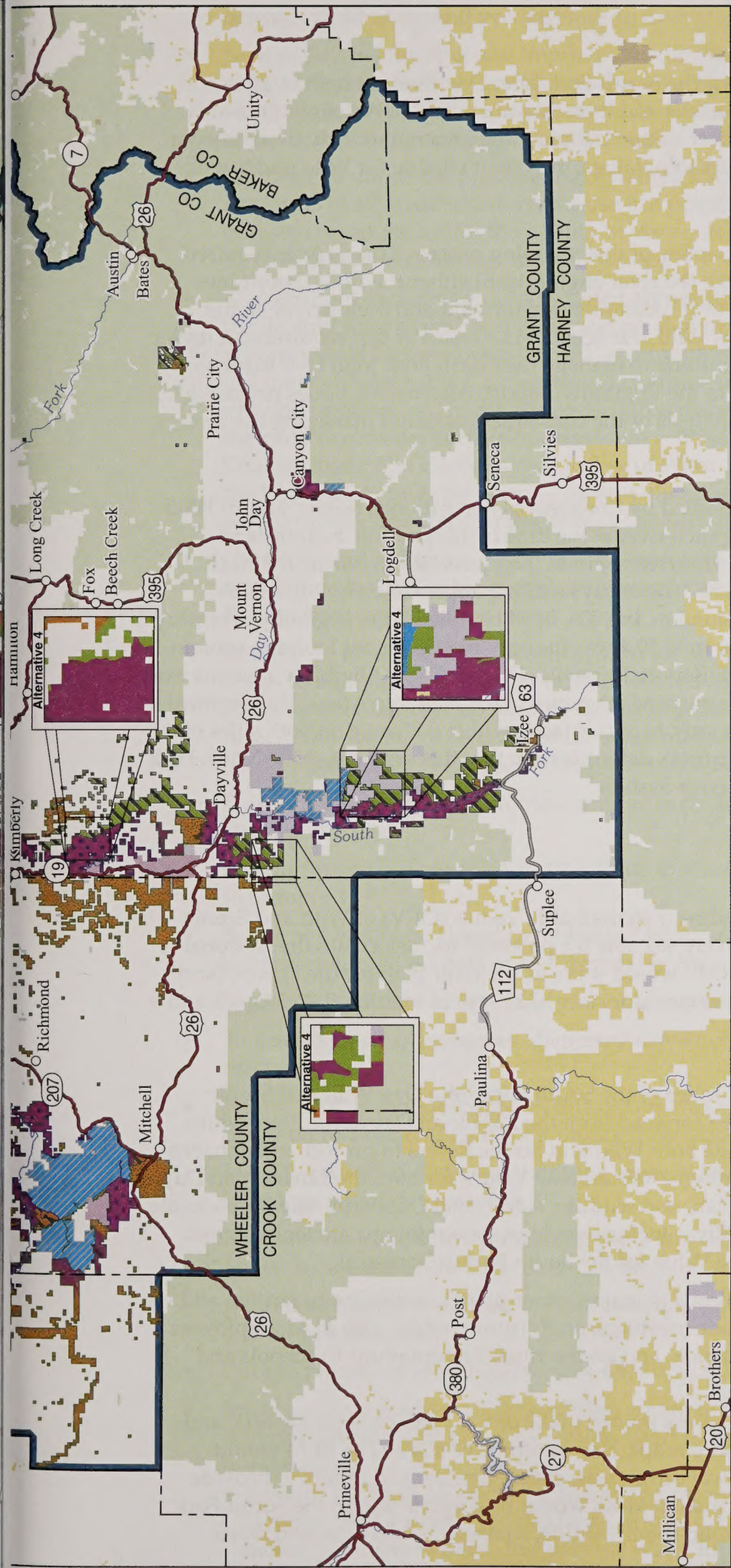
**Table 2-8. Visual Resource Management (VRM) Classification (acres), by Alternative.**

	Alternative 1	Alternatives 2, 3 & 5	Alternative 4
VRM Class I (Least amount of visual change)	95,893		
VRM Class II	103,645	160,199	164,574
VRM Class III	174,989	150,994	150,972
VRM Class IV (Major level of visual modification)	82,306	49,285	44,484









LEGEND

Planning Area Boundary

Administered Land

- Bureau of Land Management
- Forest Service
- John Day Fossil Beds National Monument
- Other Federal
- State
- Private or Other

Visual Resource Management on BLM Administered Land Alternative 1

- Class 1: Highest Scenic Value
- Class 2
- Class 3
- Class 4: Lowest Scenic Value

Visual Resource Management on BLM Administered Land Alternatives 2-5

- Class 1: Highest Scenic Value
- Class 2
- Class 3
- Class 4: Lowest Scenic Value



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John Day Basin  
Proposed Resource Management Plan  
Final Environmental Impact Statement

2012

Map 8: Visual Resource Management

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## Special Designations

### Wild and Scenic Rivers

During scoping, the BLM determined that identification of the North Fork John Day River as both eligible and suitable for Wild and Scenic River status was not controversial and therefore not an issue. An eligibility study determined that the North Fork John Day was the only river within the planning area not already designated a Wild and Scenic River that contains Outstandingly Remarkable Values, making it eligible for Wild and Scenic River Status.

Once the Eligibility Report is accepted (which occurred outside of this planning process), the BLM is required to protect the Outstandingly Remarkable Values that make the river eligible until either the BLM determines the river is not suitable for Wild and Scenic River status, or if recommended for wild and scenic river status Congress determines that it will not designate the river as Wild and Scenic. As a result of this requirement under Alternative 1 (No Action Alternative), the BLM would continue to manage the North Fork John Day River to protect the Outstandingly Remarkable Values identified in the Eligibility Report. Alternative 4 does not make a determination of suitable for the North Fork to allow analysis of the consequences of not managing the river consistent with the Wild and Scenic River Act.

Under the Wild and Scenic River (WSR) Act, rivers are classified by Congress as Recreational, Scenic, and/or Wild depending on the extent of development and access along each river at the time of designation. Federal land management agencies must conduct eligibility evaluations for rivers within their jurisdiction during the RMP process. In 2005, a BLM ID Team identified and evaluated 567 waterways totaling approximately 1,400 miles. Nineteen waterways were determined to need further evaluation. In 2006, BLM completed the eligibility inventory. The North Fork John Day River from Camas Creek to river mile 20.4 was the only river segment found to contain Outstandingly Remarkable Values (see Appendix I-1, Final Report, Prineville District Office Eligibility Inventory of Potential Wild and Scenic Rivers in the John Day Basin Resource Management Plan Planning Area). This segment is about 37 miles, and the eligibility determination applies only to public lands within 0.25 mile on both sides of the river. The John Day Basin Draft RMP/EIS contained the District's determination that this segment of the North Fork is suitable for inclusion in the National Wild and Scenic Rivers System.

### Management Common to All Alternatives

#### Objective WSR1

Protect and enhance the free flowing nature and Outstandingly Remarkable Values (ORV) of Wild and Scenic Rivers (Map 9), and rivers determined to be administratively suitable for potential inclusion into the National Wild and Scenic River (WSR) System. Direction in the PRMP would serve as the river plan for the Lower, North Fork, and South Fork John Day River, as well as other river corridors (see glossary) as identified on Maps 1 and 9.

#### Actions

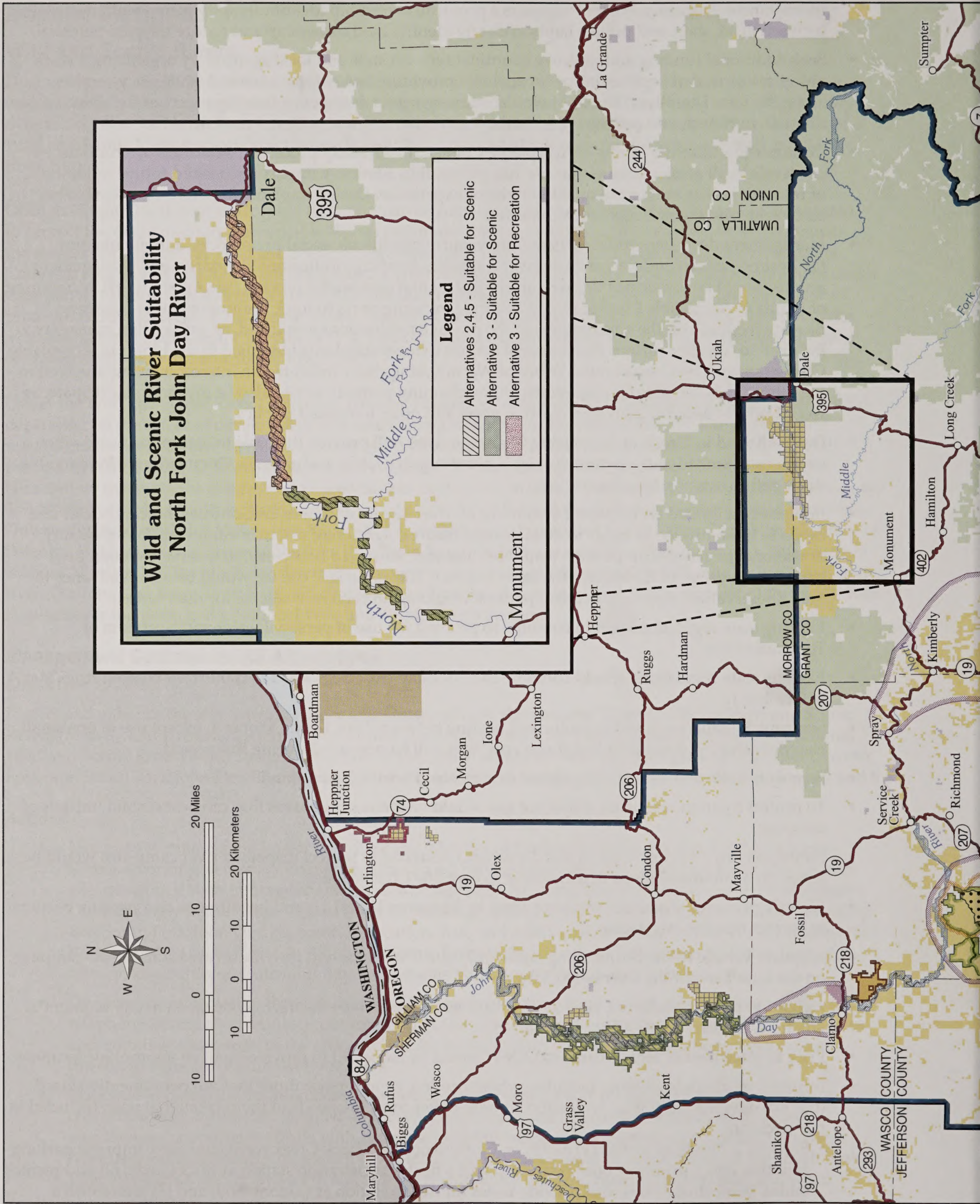
- Manage 148 miles of the Lower John Day and 47 miles of the South Fork John Day Wild and Scenic Rivers according to management direction carried forward from the 2001 John Day River Plan, which was developed with interagency partners. Manage both Wild and Scenic Rivers to protect and enhance Outstandingly Remarkable Values. The Outstandingly Remarkable Values for both the Lower John Day and South Fork John Day are scenic, recreation, fish, and wildlife. Additional Outstandingly Remarkable Values for the Lower John Day Wild and Scenic River include geology, paleontology, archeology, and history; an additional Outstandingly Remarkable Value for the South Fork is botanical.
- Disseminate information through information boards at major access points, responses to written and telephone information requests, outfitter and guide meetings, and visitor contact with BLM employees and volunteers stationed in the office, on public lands, and on the river. Presentations to schools and interest groups are conducted by request.
- Continue to install information boards at public access points; make onsite contacts with visitors; and create new user brochures, detailed land ownership maps, and interpretive signs. The BLM would also increase cooperative efforts with counties, local businesses, state agencies, and others to provide river users with consistent information. An information kiosk would be constructed on the South Fork John Day Back Country Byway to educate the public about wildlife, riparian, wilderness, and weed



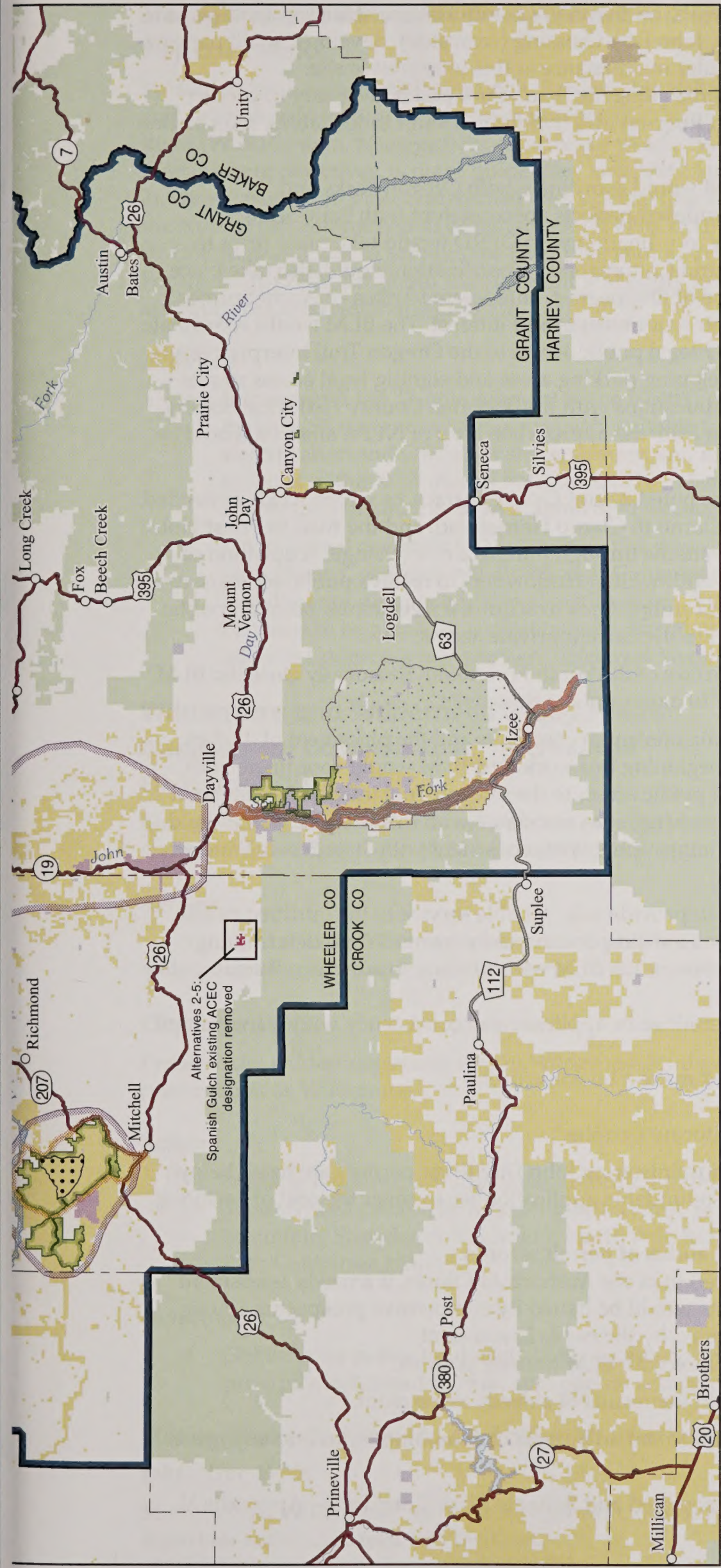
management programs. Where trespass is a problem, ownership identification markers would be installed between BLM, state, and private lands to clearly identify land ownership and reduce trespass potential.

- Seek additional funding and improve coordination with state and local agencies by organizing a work group comprised of representatives of agencies providing law enforcement and emergency services along the John Day River. The BLM would encourage joint emergency training exercises for agencies, fire districts, outfitters, and private individuals.
- Continue to utilize the Limits of Acceptable Change (LAC) study process to determine appropriate use levels in all areas where visitor use has potential to adversely impact the desired future condition of resource values and/or the quality of visitor experience. Design implementation level actions to be consistent with the findings of LAC studies.
- Management decisions would be based on resource conditions, social preferences, and maintaining the desired future condition of these river segments. Resource indicators, standards, and management actions would be developed through an environmental assessment process (see Appendix H). Monitoring of Limits of Acceptable Change would continue in future years to track resource changes over time, provide feedback on the effectiveness of the management actions employed, as well as alert managers to the need to consider further management actions to meet standards identified in the Limits of Acceptable Change study. The Confederated Tribes of Warm Springs have indicated an interest in being involved in the Limits of Acceptable Change study. Other planning partners would also be invited to participate, as would private and commercial recreation users and other interested publics.
- Data collected in Limits of Acceptable Change studies will provide the basis to determine if and when a mandatory, limited-entry permit system is necessary to protect and enhance Outstandingly Remarkable River values over the long term.
- Implement a limited entry permit system for all river segments where LAC studies indicate boater use needs to be controlled in order to meet desired future condition of resource values and/or the quality of visitor experience. Trip permits would be allocated through a first-come, first-serve common pool reservation system to all users in the same manner. The applicable use fee would be due in advance to hold a reservation. Any canceled trip permits would again become available for reservation.
- Existing state regulations would continue to prohibit the use of personal watercraft upstream of Tumwater Falls.
- Existing state regulations would continue to seasonally close Segment 1 to motorized boating from May 1 to October 1.
- Segment 3 would be closed to motorized boating between May 1 and October 1, except use of one small electric motor (40 pounds or less thrust) per boat will be permitted during this period.
- Segments 2, 10, and 11 would be closed to motorized boating year-round.
- To protect riparian resources, dispersed use would be managed in areas that can best sustain impacts of camping.
- Future actions (not described in this document) designed to protect dispersed river campsites would be based on recommendations of a Limits of Acceptable Change study.
- Identify preferred dispersed camping areas in Segments 10 and 11, and install signs and parking barriers to protect riparian vegetation.
- Regulate vehicle traffic by installing signs and vehicle barriers, and provide an area suitable for camping on the west bank of the river near Clarno.
- Actions to protect resources, such as campsite rehabilitation or closure, may be taken in any segment at any time, if necessary.
- Prior to placement of vehicle barriers, ODFW would be requested to provide input on appropriate locations.
- Improve or upgrade existing facilities, where needed, or to replace those that are permanently closed (but not develop additional recreation sites) to better meet the needs of the recreational user. Included in our decision:
  - *Segment 1:* The BLM would (1) maintain Cottonwood and Rock Creek recreation sites, improve parking facilities, add a primitive boat ramp, and add a boater registration station at Rock Creek; (2) add picnic tables, plant shade trees, and provide water for dump station at Cottonwood; and (3) reestablish a









Map 9: Special Management Areas

LEGEND

- Alternatives 1-5**

  - Back Country Byway
  - Wilderness Study Area
  - Wilderness Area
  - Wild Horse Management Area
  - Wild and Scenic River
  - Area of Critical Environmental Concern (ACEC)
- Alternatives 2-5**

  - Back Country Byway
  - Research Natural Area
  - Paleo CAMP
  - Area of Critical Environmental Concern
  - Area of Critical Environmental Concern Upon Release from Wilderness Study

- Planning Area Boundary
- Administered Land**
- Bureau of Land Management
  - Forest Service
  - John Day Fossil Beds National Monument
  - Other Federal
  - State
  - Private or Other



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**PRINEVILLE DISTRICT**  
**John Day Basin**  
**Proposed Resource Management Plan**  
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Map 9: Special Management Areas



- Cooperative Management Agreement (CMA) with the Sherman County Historical Society to manage and maintain the Oregon Trail interpretive site, John Day Crossing (west side), develop a small parking area, install access signing, and implement regular maintenance at this interpretive site.
- The BLM would periodically evaluate use patterns along the South Fork and if necessary to protect resources, would develop a campground near Ellingson Mill including a vault toilet, tables, information board, signs, and parking barriers.
  - Prior to implementation of these actions, the BLM would coordinate with Oregon Parks and Recreation Department (OPRD) to ensure that proposed projects are consistent with State Scenic Waterway regulations, where applicable. Further coordination with OPRD would take place prior to implementation of actions on state land (Clarno and Cottonwood). Coordination would also take place with ODFW, Division of State Lands, Army Corps of Engineers, Confederated Tribes of Warm Springs, affected counties, and others depending on permit requirements and interest. The BLM would coordinate with local governments and landowners to clarify legal public access to the Oregon Trail interpretive site (west side) and McDonald Crossing prior to developing parking areas and signing legal access routes to these sites. The BLM would reestablish communications with the Sherman County Historical Society. Prior to developing a campground near Ellingson Mill, the appropriate level of NEPA analysis would be completed and necessary permits obtained.
  - Maintain public access at existing levels, except as noted below. Grade, surface, or widen roads as needed, including the BLM road on the west bank from Clarno to Clarno Homestead, and the road to Priest Hole. Continue to consolidate public land ownership patterns through purchase or exchange, acquisition of easements, and through partnership agreements with willing landowners to resolve public access issues and provide access to high value recreation opportunities. Seek to acquire a river access point on public land at Twickenham from a willing seller, to replace the current private access.
  - Improve ditches, culverts, and apply gravel to surface of the South Fork Road. Seasonally close the BLM road north of Clarno Homestead during the first 10 days of pheasant season.
  - The BLM would consult with ODFW about road maintenance procedures and the placement of ditches and culverts along the South Fork Road, prior to beginning this work. The BLM would coordinate with local governments and landowners to clarify legal public access to the Oregon Trail interpretive site west side of McDonald Crossing, then sign routes and parking areas associated with this site. The BLM would coordinate with OPRD to ensure road and access improvements are consistent with State Scenic Waterway regulations, where applicable.
  - In order to protect and enhance river values and to provide safe, reliable service to the outfitted public, the BLM has established the following criteria for awarding commercial permits. When determining whether to accept new commercial permit applications, the BLM will continue to adhere to Bureau policy that considers the following:
    - Type of public service to be provided by the permittee or applicant and consistency with management goals and objectives.
    - Ability of that person to provide the service and make a business profit.
    - Safety of commercial customers.
    - The BLM workload in administering and monitoring permits.
  - Additional measures to be taken by the BLM in administering John Day River permits are listed below:
    - New and transfer applicants would pay a non-refundable application fee to cover the cost of verifying that application requirements are met.
    - The BLM would conduct independent random audits of permit records.
    - The BLM would issue new permits at the discretion of the Authorized Officer, if a needs assessment identifies a need for a particular service. Permits would be issued by competitive prospectus among those applicants meeting specific criteria identified by the needs assessment.
    - Permit transfers would be processed in accordance with BLM transfer policies.
  - Concession permits would be considered based on the results of a needs assessment.
  - The Confederated Tribes of Warm Springs have indicated an interest in providing input into any needs assessment process.
  - Implement and enforce 'Rules of Conduct for Designated and Suitable River Corridors' – Appendix V.



## **Management Actions Specific to Alternative 2 (PRMP)**

### **Objective WSR2**

Protect and enhance the Outstandingly Remarkable Values (ORV) of existing Wild and Scenic Rivers (Map 9) and rivers determined to be administratively suitable for potential inclusion into the National Wild and Scenic River (WSR) System. Management objectives and actions identified in Common to All Alternatives, as well as Management objectives, actions, guidelines, and Best Management Practices in the rest of the PRMP (Alternative 2), were designed to protect identified ORVs of existing Wild and Scenic River segments as well as segments of the North Fork determined to be suitable for the life of the plan regardless of the status of formal designation by Congress and would serve as the river plan should Congress provide formal designation to the North Fork. For the North Fork, proposed management will apply to boundaries identified on Map 9 unless adjusted by appropriate Congressional legislation.

### **Actions**

- Recommend the 37-mile segment of the North Fork John Day River determined eligible for inclusion in the WSR system as administratively suitable for designation by Congress as WSR with a Scenic classification and ORVs of fishery, scenery, and recreation. The suitability determination would apply to lands within 0.25 mile of both sides of the 37-mile segment, and determinations of suitability would follow the guidance in BLM Manual 8351, section .33, pages 20-23.
- Upon formal designation or release by Congress, review the management direction to ensure compatibility with future Congressional direction. If Congress releases the segment of river determined to be suitable and does not provide additional management direction, this segment and surrounding lands would continue to be managed consistent with direction identified in the Proposed RMP, which was designed to address Congress's management objectives identified in the Oregon Land Exchange Act of 2000.

## **Wilderness and Wilderness Study Areas**

### **Management Common To All Alternatives**

#### **Objective WN1**

Manage Spring Basin Wilderness Area (see Map 9a) in accordance with standard goals for BLM wilderness management as directed in BLM Manual 8561, Appendix 1.

### **Actions**

- Until a final wilderness management plan is completed for Spring Basin Wilderness Area, manage the area in accordance with the Interim Wilderness Management Plan in Appendix U of this document.

#### **Objective WN2**

Preserve the wilderness values within Wilderness Study Areas (WSAs) so as not to impair their suitability for preservation as Wilderness.

### **Actions**

- Manage Wilderness Study Areas according to *Interim Management Policy (IMP) for Lands Under Wilderness Review* (BLM 1995). The following Wilderness Study Areas are within the planning area: Aldrich Mountain, Strawberry Mountain, North Pole Ridge, Thirtymile, Lower John Day, Sutton Mountain, and Pat's Cabin (see Map 9).

### **Guidelines**

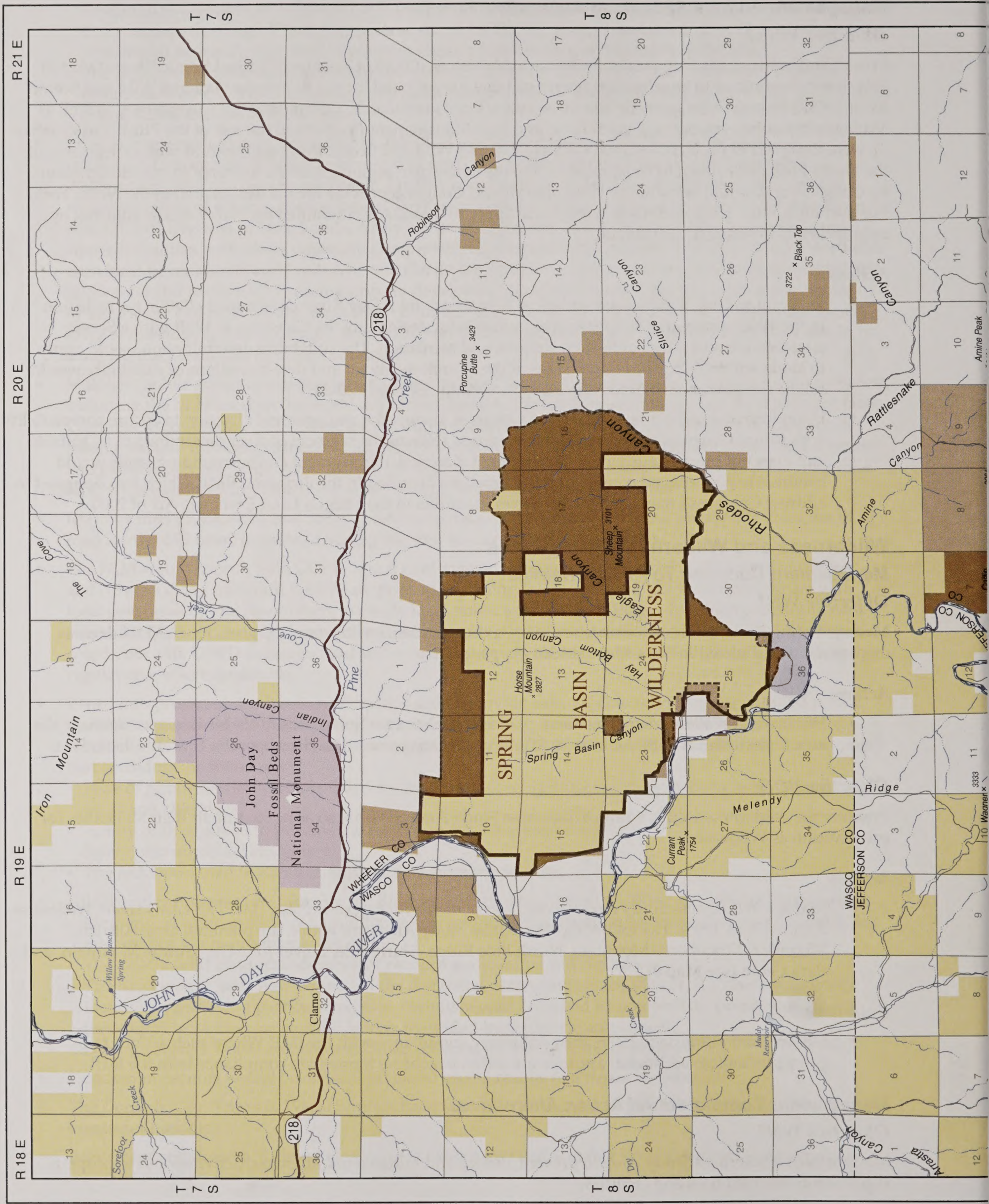
- Obtain from public land users their voluntary compliance with the IMP. Where such actions fail, promptly initiate additional appropriate action to achieve immediate compliance with the IMP.

### **Management Common to All Action Alternatives**

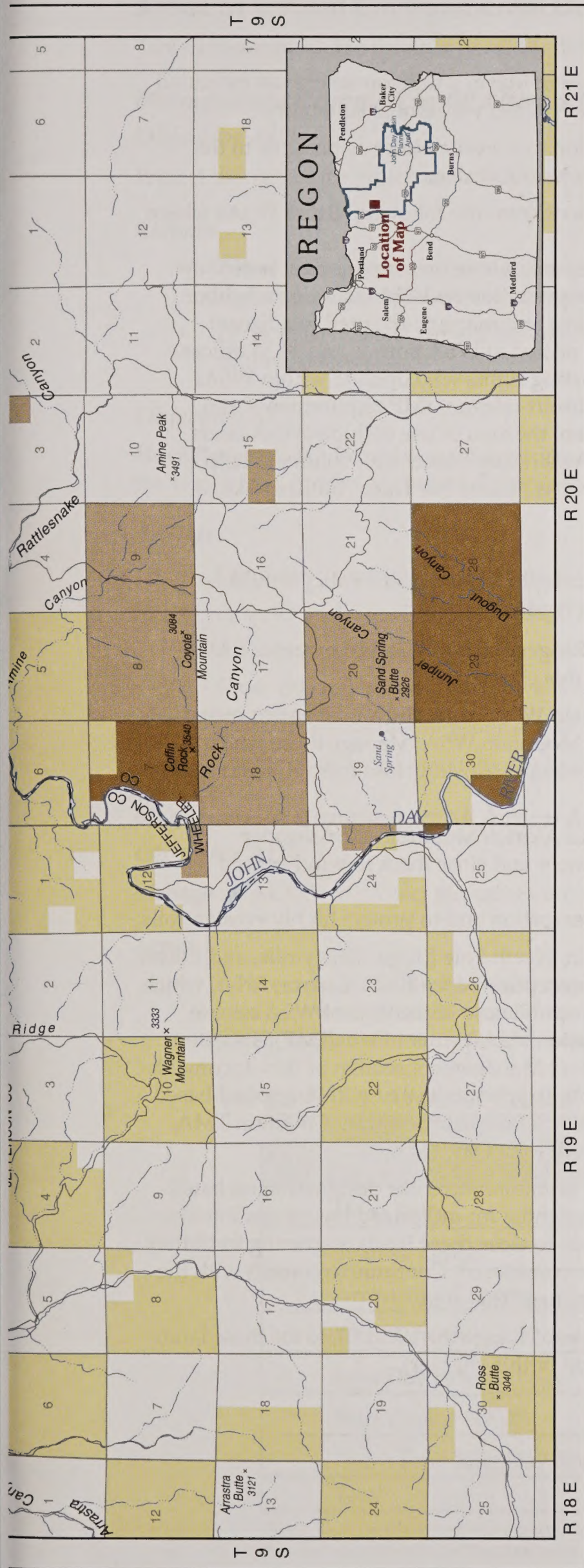
#### **Objective WN3**

Monitor each Wilderness Study Area to prevent, detect, and mitigate unauthorized activities and to properly supervise authorized uses and facilities.









Map 9a: Spring Basin Wilderness

## LEGEND

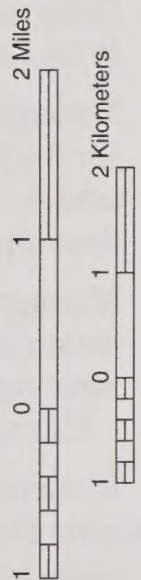
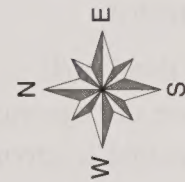
- Existing Spring Basin Wilderness Boundary
- - - Spring Basin Wilderness Boundary with Land Exchanges Included

### Legislated and Directed to be Considered for Exchange

- Land Transfer from Federal Government
- Land Transfer to Federal Government

### Administered Land

- Bureau of Land Management
- John Day Fossil Beds National Monument
- State
- Private or Other



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## PRINEVILLE DISTRICT

### John Day Basin

## Proposed Resource Management Plan Final Environmental Impact Statement

2012

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Map 9a: Spring Basin Wilderness



### Actions

- See Appendix N for required monitoring direction.
- In Sutton Mountain WSA, close a short spur route to vehicle use in Meyer's Canyon where use extended beyond the authorized area, to stop unauthorized activities and protect wilderness suitability.
- Immediately reclaim impacts caused by any unauthorized action to a level as close as possible to the original condition, or at least to a condition that is substantially unnoticeable.
- Reduce the frequency of WSA violations by implementing actions from the following list in WSAs where violations are occurring:
  - Improve access to public information about WSAs; what they are, where they are located, how they are managed differently from non-WSA lands, and what is expected of the WSA visitor or neighbor. Provide this information on the BLM web site and in brochures and maps distributed to adjacent landowners, permittees and lessees, local communities, and posted at WSA portals and BLM offices.
  - Since operators often change over time, notify holders of existing rights who operate within WSAs about IMP requirements on a regular and continuing basis. Insert relevant IMP requirements into grazing lease agreements and special recreation permits where the area of use includes WSA lands.
  - Through the media, notify the public about WSA violations when they occur, seek volunteer help to reclaim impacts, and offer tips on how to care for WSAs (such as "Leave No Trace" outdoor skills).

### Contingent Actions

If a Wilderness Study Area is released by Congress for other uses, the Interim Management Policy would no longer apply to these lands and the BLM would allocate these released lands as follows:

- Designate the lands contained within the existing North Pole Ridge, Thirtymile, and Lower John Day WSAs as the Lower John Day ACEC (see the ACEC section of this chapter).
- Manage the lands contained within the existing Sutton Mountain WSA under the management proposed for the John Day Paleontology ACEC that overlaps the Sutton Mountain WSA. Manage these lands under no surface occupancy requirements for fluid mineral development, and close them to wind energy development.
- Manage the lands contained within the existing Pat's Cabin and Aldrich Mountain WSAs under no surface occupancy requirements for fluid mineral development and close them to wind energy development to protect scenic values.
  - Continue to protect opportunities for solitude or primitive recreation and to protect highly erosive soils.
- If released, the Sutton Mountain, Pat's Cabin, Aldrich Mountain, North Pole Ridge, Thirtymile, and Lower John Day WSAs would be designated OHV Limited, with the exception of the Black Canyon RNA, which would be managed as OHV Closed. Roads legally available for public use at the time of WSA release would be designated as interim routes until a Final Transportation Management Plan (TMP) is written. The Final TMP will utilize decision criteria specified in the Travel Management section of this document, ACEC direction in this document, and a prescribed road density (upper limit) that will be applied based on location of the released lands relative to the appropriate TMA: 0.96 mi/mi<sup>2</sup> - Sutton Mountain TMA, 1.17 mi/mi<sup>2</sup> - Lower John Day TMA, and 1.65 mi/mi<sup>2</sup> - South Fork John Day TMA.
- Continue the OHV Closed to motorized vehicle use except for administrative use designation on lands within the existing Strawberry Mountain WSA to reduce the potential for motorized incursions into the adjacent USFS Strawberry Mountain Wilderness Area. Continue to close these lands to grazing until they are released from WSA status, at which time grazing would be considered. Continue to consult with the Malheur National Forest to identify ways to more efficiently manage this area.
- If existing WSAs are released from wilderness study by Congress, change the VRM Class for these lands from VRM Class I to VRM Class II (see Visual Resources section of this chapter).



## Areas of Critical Environmental Concern

Table 2-9 compares the number of ACEC designations and acres by alternative.

### Management Common to All Alternatives

#### Objective AC1

Protect the values for which each ACEC was designated or proposed.

#### Actions

- Allow management actions and resource uses within ACECs to meet objectives, provided these actions and uses are compatible with the values and resources for which the ACEC was proposed.
- Do not allow management actions or uses if specifically prohibited within the ACEC (see area-specific actions, below).

#### Objective AC2

**Horn Butte ACEC:** Provide quality nesting and brood-rearing habitat (shrub canopy cover of less than 10%) for the long-billed curlew. Minimize disturbance during nesting. Improve the riparian area along Eightmile Canyon.

#### Actions

- Continue to designate and manage the existing Horn Butte ACEC (5,999 acres).
- Acquire additional habitat through exchange.
- Acquire private land in adjacent sections 13, 15, and 16 contingent on willing sellers.
- Close the area to off-highway vehicles (OHVs) from March 15 through May 30.
- Develop an additional water source for livestock and wildlife.
- Use noxious weed management to eliminate yellow star thistle.

### Management Common to All Action Alternatives

#### Objective AC3

Manage all ACECs to protect the values for which they were designated.

#### Actions

- Where new ACEC designation occurs wholly within existing Wilderness Study Areas, management guidance would continue under the Interim Management Policy for Lands Under Wilderness Review (IMP). Implementation of ACEC standards and guidelines would occur if Congress removes a Wilderness

**Table 2-9. Areas of Critical Environmental Concern by Alternative.**

ACEC Name	Acres by Alternative	
	Alternative 1	Alternatives 2-5
Horn Butte	5,999	7,152
Spanish Gulch	333	-
Armstrong Canyon	-	3,885
Ferry Canyon <sup>1</sup>	-	2,364
John Day Paleontology	-	38,168
Black Canyon RNA <sup>1</sup>	-	(6,639)
North Fork John Day River	-	16,837
Total	6,332	68,406

<sup>1</sup>Black Canyon RNA overlays a portion of the John Day Paleontology ACEC and to avoid double counting is therefore not included in the total acres.



Study Area from wilderness consideration. For new ACECs that are not within a Wilderness Study Area, implementation would begin upon approval of the John Day Basin RMP/ROD.

- Continue livestock grazing if consistent with ACEC objectives and in accordance with Standards for Land Health and Guidelines for Grazing Management.
- Limit OHV use and other mechanized vehicles (e.g., mountain bikes) to designated routes unless such use could be allowed while still protecting ACEC values.
- Exclude rights-of-way needed to access private land on existing roads unless no practical alternative is available. If installation of utilities is consistent with ACEC objectives, mitigations such as burying them may still be required. Evaluate all new construction for their potential to adversely impact the values for which the ACEC is designated.
- Allow personal rockhounding using non-motorized equipment, except in the John Day Paleontological ACEC.
- When consistent with ACEC objectives, allow all forms of vegetation and habitat management, including prescribed fire, mechanical treatment and seeding. Design such projects to maintain or enhance the ACEC values and as an integral part of ACEC management. Emphasize restoration or improvement of native plant communities and habitat for raptors; fish; neotropical birds; and threatened, endangered or other special status plants and animals. Design long-term vegetation maintenance to emulate natural processes.
- Allow all forms of noxious weed management, including mechanical control, the use of herbicides and hand pulling, such that they are consistent with the objectives for this ACEC. Allow insect control consistent with ACEC objectives.

#### *Guidelines*

- See Appendix N for monitoring guidelines.
- Increase the availability of public information concerning ACECs (boundaries, management guidelines, reasons for designation, etc.) to provide for better public support of these areas. This could include, but not be limited to perimeter signing/identification, publication and dissemination of educational/interpretive brochures, news releases, and field trips.
- Prepare an implementation schedule for each ACEC. The schedule shall identify the priority, sequence, and costs of implementing activities associated with protection of the ACEC resources or values, including monitoring activities (BLM Manual 1613—Areas of Critical Environmental Concern).
- Provide educational material concerning ACEC designations in the planning area, proposed projects, opportunities for public involvement, and other pertinent information in an ACEC section on the District's web site.
- Identify all ACEC boundaries on the ground.
- Pursue opportunities for education and interpretation of the special values within the ACEC.

#### *Objective AC4*

**Spanish Gulch ACEC:** Upon publication of the RMP, remove from ACEC designation any ACECs that are no longer needed, or no longer meet the relevance and importance criteria.

#### *Actions*

- Remove Spanish Gulch ACEC from ACEC designation. Adequate protection is already in place due to the site's eligibility as a National Register site and lack of public access.
- Manage Spanish Gulch to meet other plan objectives and match land allocations of similar adjacent landscapes.

#### *Objective AC5*

**Horn Butte ACEC:** Maintain viable populations of long-billed curlew and Washington ground squirrel. Preserve and protect the qualities of the Fourmile Canyon segment of the Oregon Trail that pass through the ACEC.



Although the status of the long-billed curlew has been lowered since initial Horn Butte ACEC designation (it is now considered "vulnerable"), it would continue to be considered. However, the management focus would shift toward the Washington ground squirrel, listed as "Threatened" by the State of Oregon and a Candidate for listing by the U.S. Fish and Wildlife Service. The Washington ground squirrel habitat within the Horn Butte area has been determined to have more than local importance and would therefore be protected while allowing compatible uses. The Fourmile Canyon tract contains additional Washington ground squirrel habitat of more than local importance and traces of the Oregon Trail, which is of national historic significance (see Oregon Trail Management Plan: Prineville District 1993).

#### *Actions*

- Add 1,153 acres of public lands south of the existing Horn Butte ACEC (including the Fourmile Canyon interpretive site) to the ACEC. Total acreage in Horn Butte ACEC would be 7,152 acres.
- Continue to maintain the Fourmile Canyon interpretive site.
- Close the Fourmile Canyon tract to new rights-of-way. Co-use of existing rights-of-way may be permitted as long as features and viewshed of the Oregon Trail are protected.
- Special consideration would be given to the Fourmile Canyon tract to eliminate or minimize vegetation management actions that would impair the visual and scenic qualities of the Oregon Trail.
- Do not allow mechanical noxious weed management in the Fourmile Canyon tract.

#### *Objective AC6*

**Armstrong Canyon ACEC:** Protect visual quality related to canyon landscape and wildlife viewing opportunities.

#### *Actions*

- Manage 3,885 acres in the Armstrong Canyon area as the Armstrong Canyon ACEC immediately after publication of the Record of Decision for the John Day Basin RMP. In the future should any number of the Wilderness Study Areas comprising the proposed Lower John Day River ACEC be released from Wilderness Review, the Armstrong Canyon ACEC would be consolidated as part of this larger ACEC.
- Existing disturbances, maintenance, and all authorized activities associated with the Pacific Gas Transmission line (Pine Hollow and Thirtymile areas) would continue as needed, consistent with other resource objectives.

#### *Objective AC7*

**Ferry Canyon ACEC:** Protect visual quality.

#### *Actions*

- Manage 2,364 acres in the Ferry Canyon area as the Ferry Canyon ACEC immediately after publication of the Record of Decision for the John Day Basin RMP.
- In the future should any of the Wilderness Study Areas comprising the proposed Lower John Day River ACEC be released from Wilderness Review, the Ferry Canyon ACEC would be consolidated as part of this larger ACEC.

#### *Objective AC8*

**Lower John Day River ACEC:** Protect visual quality in three WSAs (John Day, North Pole Ridge, and Thirtymile) in the event these areas are released by Congress from wilderness review.

#### *Actions*

- Create the Lower John Day River ACEC (40,295 acres) consisting of the existing acreage of the Lower John Day, North Pole Ridge, and Thirtymile WSAs.
- If Congress releases any or all of these WSAs from wilderness study, designate and manage as an ACEC. The acreage shown assumes all three would be released.



- Additionally, the Armstrong Canyon (3,885 acres) and Ferry Canyon (2,364 acres) ACECs, immediately designated upon publication of the ROD, would be integrated into this larger Lower John Day River ACEC at the time of release. (The maximum potential size of this larger ACEC would be 46,567 acres if all three WSAs were released from wilderness study.)
- Existing disturbances, maintenance, and all authorized activities associated with the Pacific Gas Transmission line (Pine Hollow and Thirtymile areas) would continue as needed. These areas would be included within the ACEC, whereas under Wilderness Study Area status they created the boundaries.

### *Objective AC9*

**Black Canyon ACEC/RNA:** Protect and provide educational and research opportunities to study specific native plant communities and a state-listed Threatened plant species (arrowleaf thelypody.) Emphasize natural processes.

- The proposed ACEC/RNA contains a representative of seven plant community cells that could be included in the statewide RNA system, one of which is not represented elsewhere (big sagebrush/Thurber needlegrass). Additionally, the area contains a high density of endemic plant species.

### *Actions*

- Create Black Canyon ACEC/RNA (6,639 acres) and manage it as a Research Natural Area (RNA). The area is within the center of, and would overlay, the Painted Hills Cooperative Area for the Management of Paleontology (CAMP), a portion of the John Day Paleontological ACEC, and is within the existing Sutton Mountain WSA.
- Exclude livestock grazing.
- Exclude OHV use, including non-motorized vehicles.
- Do not authorize rights-of-way.
- In the long term, exclude livestock grazing using natural topographic barriers and/or changes in management.

### *Guidelines*

- See Appendix N for monitoring guidelines.
- Generally do not allow vegetation and habitat management, including prescribed fire, mechanical treatment and seeding. However, make evaluations of the need for vegetation management on a site- and species-specific basis, weighing the need for management with the emphasis on natural processes and the values for which the ACEC/RNA was designated.
- Generally do not allow noxious weed management, consistent with the objectives for this ACEC/RNA. Make evaluations of the need for control on a site- and species-specific basis, weighing the need for weed control with protection and maintenance of the values for which the ACEC/RNA was designated.
- Make the area available for non-destructive research and prepare a guidebook summarizing the values of the area and the research opportunities available.

### *Objective AC10*

**John Day Paleontology ACEC:** Preserve/protect paleontological resources while allowing for their extraction, research, and other scientific and educational uses. These resources have been determined to be of more than local significance and are currently co-managed under agreement with the NPS, John Day Fossil Beds National Monument (No. IA9325-8-0001, as amended).

- The visual quality of Sutton Mountain has been determined to have more than local importance and would therefore be protected while allowing compatible uses.

### *Actions*

- Designate the John Day Paleontology ACEC (38,168 acres). Due to the sensitive nature of the specific ACEC locations, three Cooperative Areas for the Management of Paleontology (CAMPs)—Sheep Rock, Painted Hills, and Clarno (Map 9)—have been created for geographic reference only. The management



objectives for these CAMPs refer to BLM lands only and do not encumber any private, state, or other agency lands contained therein.

- Within the Painted Hills CAMP is a parcel currently designated as the Sutton Mountain WSA. Manage lands within the WSA (28,894 acres) according to the IMP until released from wilderness review by Congress.
- Close the ACEC to rock hounding.
- Onsite development of energy sources, such as oil, gas, wind, and geothermal, may be authorized except on lands within the Sutton Mountain WSA. If released from wilderness review, manage the Sutton Mountain WSA block under no surface occupancy requirements for fluid, salable, leasable, and locatable mineral development and close to renewable energy development or communication sites.
- Within the Sutton Mountain WSA, continue to manage livestock grazing according to the Sutton Mountain CRMP and the IMP.
- Limit OHV and motorized vehicle use to designated routes except for administrative use, unless otherwise designated as "Open" within this management plan.

### *Guidelines*

- Do not make available to the general public the exact locations of paleontological resources within the ACEC, but encourage research.
- All paleontology work conducted within the WSA would be consistent with the Interim Management Policy and guidance provided in the BLM Manual 8270—Paleontological Resource Management, and BLM Handbook H-8270-1—General Procedural Guidance for Paleontological Resource Management.
- Within the boundaries of the Painted Hills CAMP, and therefore overlaying the John Day Paleontology ACEC, is the 6,640-acre Black Canyon ACEC/RNA. Follow specific management direction for this area, as specified in Objective AC9.
- Continue to encourage partnerships with local entities such as the John Day Fossil Beds National Monument (NPS), Hancock Field Station, Oregon Museum of Science and Industry (OMSI), Oregon Paleo Lands Institute, and Monument High School. The BLM already maintains memorandums of understanding with the National Park Service and OMSI.
- Within the Sutton Mountain WSA, management of vegetation, noxious weeds, pests, and wildlife habitat would be consistent with guidance in the IMP. If released from wilderness review, ACEC management guidance common to all action alternatives would apply.
- Pursue objectives within the ACEC that are important for increasing scientific understanding. These would include, but not be restricted to, mapping the stratigraphy of the individual ACEC units; obtaining low level aerial photography (3,000 feet) for each individual ACEC unit for the purpose of locating specimens recovered for science; securing permanent access to isolated ACEC units; and placing "No Collecting" signs at each ACEC unit.

### *Objective AC11*

**North Fork John Day River ACEC:** Protect visual quality along North Fork John Day River. A large portion of public land within this proposed ACEC was acquired through the Oregon Land Exchange Act of 2000. The visual quality of this area has been determined to have more than local importance and would therefore be protected while allowing compatible uses.

### *Actions*

- Designate the North Fork John Day River corridor (essentially within the viewshed of the river) from Camas Creek to Wrightman Canyon an ACEC (16,837 acres).

## **Back Country Byways**

### **Management Common to All Alternatives**

#### *Objective B1*

Identify safe motorized routes for scenic viewing of areas of high scenic, natural and interpretive quality in partnership with State, County, National Park Service and other partners.



### **Actions**

- Continue to manage the South Fork John Day River Back Country Byway. This 50-mile byway parallels the South Fork of the John Day River through a scenic canyon between Dayville and the Ochoco National Forest boundary.
- Maintain road surface suitable for passenger vehicles during spring, summer, and fall seasons.

### **Management Common to All Action Alternatives**

#### **Objective B2**

Identify safe motorized routes for scenic viewing of areas of high scenic, ecological and interpretive quality in partnership with State, County, National Park Service and other partners.

### **Actions**

- Designate roads around Sutton Mountain as a BLM Back Country Byway or support a State Scenic Byway designation. This byway would consist of about 41 miles of federal, state, and county routes that circle the Sutton Mountain Wilderness Study Area. The byway would provide opportunities to discover the geological, paleontological, ecological and historic resources of the area; view narrow canyons, seasonal waterfalls, and the John Day Wild and Scenic River; glimpse wildlife such as deer, bobcat, elk, and mountain lion in their natural habitat; observe sustainable farming and ranching operations; and access the Painted Hills portion of the John Day Fossil Beds National Monument.
- Coordinate with the State Department of Transportation, Wheeler County Road Department, the town of Mitchell, and the National Park Service to develop interagency agreements (per BLM Byway Manual 8357.1) to provide roadside viewing opportunities along the designated route.

## **Native American Uses**

### **Management Common to All Alternatives**

#### **Objective N1**

Honor trust responsibility to Native American Indian tribes.

- This responsibility derives from the historical relationship between the federal government and Native American Indian tribes as expressed in treaties and other components of federal Indian law. The trust responsibility requires the BLM to conduct its activities consistent with the obligations set forth in treaties, federal court decisions, federal legislation, and in various secretarial and executive orders.
- Documents defining the relationship between the BLM and Native American Indian tribes in the context of Native American Indian uses are included in Appendix A, Legal Authorities.

### **Actions**

- Continuing existing management.
- Emphasize improving relations and understanding between the BLM and the tribes at all levels.

## **Paleontological Resources**

### **Management Common to All Alternatives**

#### **Objective P1**

Paleontological resources are preserved, protected, and made available for viewing, education, and research purposes, as appropriate.

The management of fossil resources on public lands in the John Day Basin is directed by existing laws, regulations, and agreements (see Appendix A). Example direction:

- Vertebrates may be collected only by bona fide scientific researchers and institutions under permit authority.
- Commercial collection of any fossils (including vertebrates) without a permit constitutes unauthorized use.



- Common invertebrates and most botanical fossils may be collected for noncommercial purposes without a permit, unless within Wilderness or a Wilderness Study Area, where permits are required.
- Limited quantities of petrified wood may also be collected for noncommercial purposes under terms and conditions consistent with the preservation of significant deposits as a public recreational resource.
- A permit for collection of petrified wood is required for single specimens over 250 pounds, for removal of more than 25 pounds per day per person and for removal of more than 250 pounds per year.
- A special permit must be obtained for collection of petrified wood for sale.

### **Actions**

- Conduct reactive inventory, recording, and evaluation on a project-specific level.
- Maintain files and maps.
- Conduct periodic public outreach and education.
- Consult with the National Park Service at the John Day Fossil Beds National Monument on all proposed actions that might affect fossil resources.
- In coordination with the National Park Service, conduct inventory and systematic collecting at all potential fossil localities.
- Coordinate with the National Park Service and other outside entities to conduct appropriate scientific research on identified localities.
- Pursue development of partnerships with external entities to accomplish any or all of the above.

## **Cultural Resources**

### **Management Common to All Alternatives**

#### **Objective C1**

The integrity of cultural resources (both historic and prehistoric) are preserved, protected, and made available for cultural, educational, and/or research purposes, as appropriate.

The BLM's management of cultural resources consists of applying protection and preservation measures in accordance with treaty trust responsibilities, federal law, and BLM policy (see Appendix A). There are specific laws that deal with Native American religious freedom and graves protection. Measures to meet the legal authorities include:

- Develop partnerships to gather information about or protect key resources, general or site-specific interpretation, and public outreach/education efforts.
- Conduct reactive inventory, recording and evaluation on a project-specific level.
- Maintain files and maps.
- Periodically monitor for site conditions and violations of the Archaeological Resources Protection Act (ARPA).
- Conduct periodic outreach and education efforts.

### **Actions**

- Attempt to involve tribal groups, where practicable, directly in on-the-ground management actions.
- Re-record known sites.
- Evaluate sites for appropriate BLM use categories/National Register eligibility.
- Conduct intensive and complete inventory in areas of high probability and/or potential high use not previously inventoried and which are not necessarily associated with specific projects.
- Conduct limited site testing/salvage excavation where appropriate.
- Apply appropriate rehabilitation/stabilization techniques to sites as needed.



- Develop and implement appropriate interpretive/public outreach/educational techniques.
- Pursue development of a more active role for tribal involvement, where practicable, in any or all of the above (i.e., participating in the rehabilitation of a damaged site).
- Pursue development of partnerships with various internal and external entities (e.g., Indian tribes, non-government organizations, amateur groups, volunteer work groups) to accomplish any or all of the above.

## Livestock Grazing

### Management Common to All Alternatives

#### Objective L1

Meet the Standards for Land Health and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the States of Oregon and Washington (Standards & Guidelines 1997). Status of completed Standards & Guidelines is shown in Appendix J.

#### Actions

- Modify grazing system, season of use, stocking density, class or type of livestock, or activity plans (including existing allotment management plans, agreements, decisions and/or terms and conditions of grazing use authorizations) (43 CFR §4120.2, §4130.3, §4180.2); or modify existing or install new range developments (§4120.3). Adjustments can be made to meet the goals and objectives in this and other sections of the RMP (§4110.3.3).
- When considering appropriate changes to grazing management following a failure of Standards for Land Health that result from current grazing practices a no grazing alternative would be considered. This RMP will expressly allow for closure of part or all of an allotment or pasture without further RMP amendment where the closure is necessary to address a failure to meet the Standards for Rangeland Health or to address another site-specific multiple use conflict.

#### Objective L2

Maintain forage production and livestock use at levels sufficient to provide a sustained flow of local economic benefits and to protect non-market values.

#### Actions

- Allow leased livestock grazing at the use levels (i.e., AUM) described in Appendix J, and in the areas shown as allotments on Map 10: Grazing Allotments, except where specifically noted in other sections of this plan.
- Make forage available on a temporary basis to qualified applicants through temporary nonrenewable grazing authorization, when consistent with RMP goals and objectives (i.e., to facilitate rangeland restoration and recovery on a landscape scale).
- Allow prescribed livestock grazing to control weeds, reduce fire danger, or accomplish other management objectives, regardless of parcel status (including vacant allotments, areas of discontinued grazing, or outside of grazing allotments).
- Manage livestock grazing during and following drought in accordance with "Oregon and Washington Drought Policy" to maintain soil and vegetation health and productivity following procedures outlined in Appendix J.
- Carry forward decisions regarding season of use from previous plans (see Appendix J).
  - For example, in the John Day River and major tributaries, continue to manage grazing to protect and enhance Outstandingly Remarkable Values. Season of use would primarily be late winter and early spring, not to exceed two months. Within these corridors, spring grazing would not be authorized in pastures with riparian areas when flows drop below 2,000 cubic feet per second, to aid in protection of riparian vegetation. Winter grazed, the 2,000 cubic feet per second restriction is an interim measure (see Monitoring). Establish compliance, utilization and trend standards for continued grazing. If grazed



riparian areas within designated corridor are not improving at same rate as similar ungrazed areas within 10-15 years, exclude grazing permanently.

- Any campsite in the Wild and Scenic River closed to recreation use for recovery would also be closed to grazing.

## Management Actions Specific to Alternative 2 (PRMP)

### Objective L3

Meet multiple use goals and objectives as stated in this and other sections of this RMP/EIS, while considering resource conflicts, potential for allotment improvement, and agency funding constraints.

### Actions

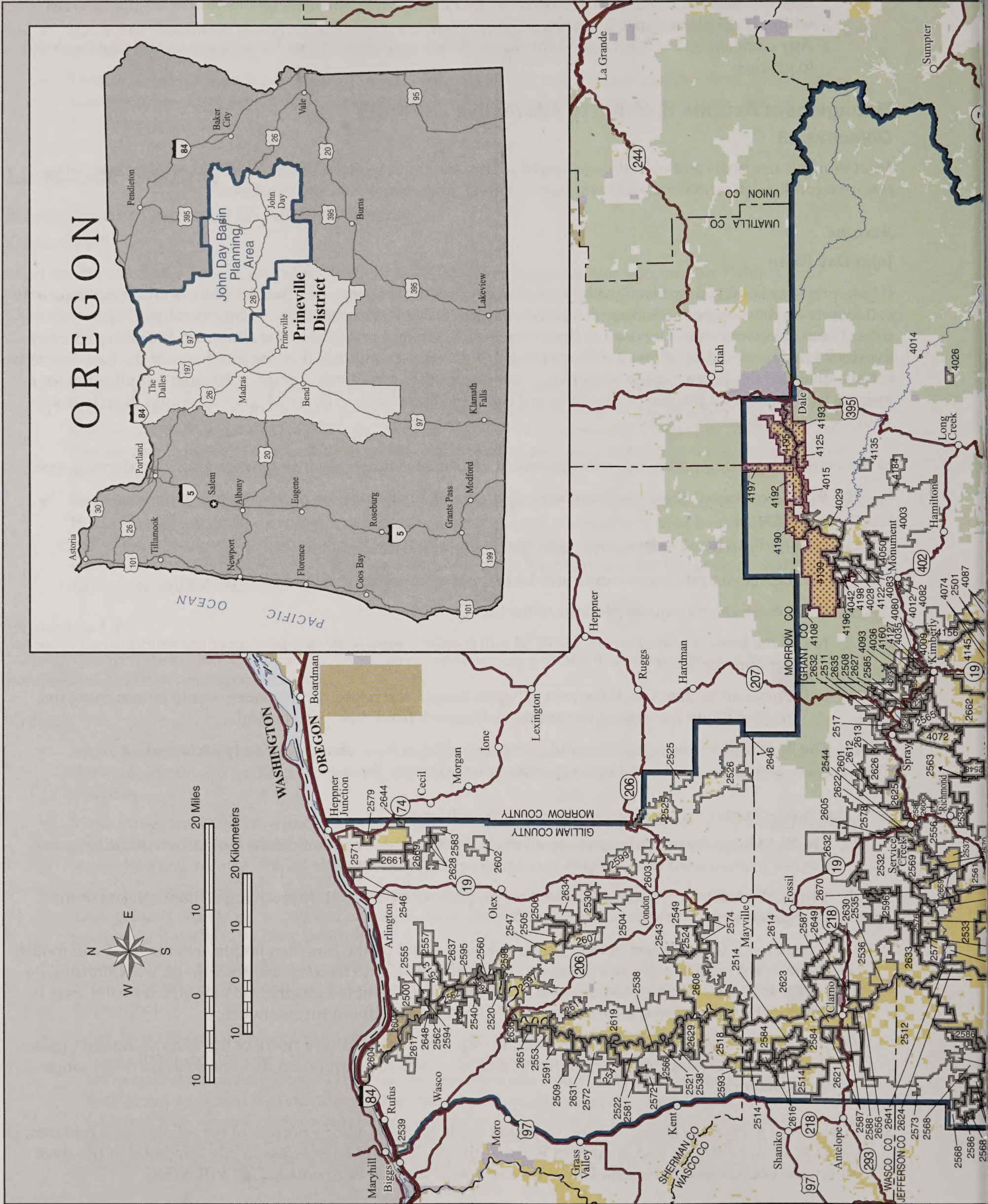
#### John Day Basin

If base property is owned or managed by a local, state, or federal agency or tribe, the BLM would coordinate and collaborate on development of objectives and management of the associated allotment(s) with said agency or tribe. These objectives would be used to determine future grazing practices in the allotment, including whether livestock grazing would be allowed if the grazing preference is relinquished or the purchaser of the base property is not a qualified applicant. Unless ownership patterns or other conditions change, subsequent application for a grazing lease on all or a portion of the allotment could be denied unless livestock grazing would be in harmony with the management objectives.

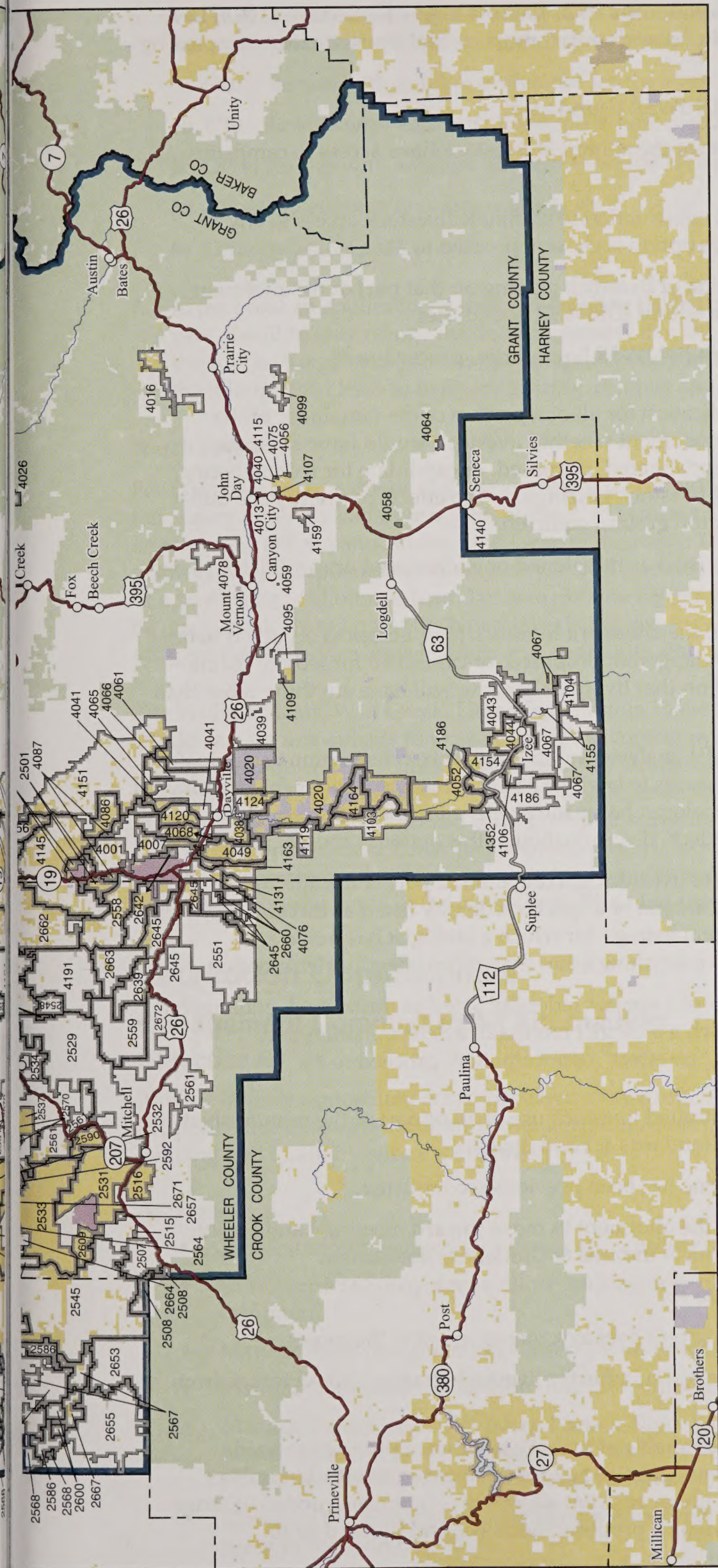
In the event of a grazing preference relinquishment, allocate resources according to the following decision tree:

1. The BLM is contacted about possible relinquishment of all or a portion of the grazing preference to an existing lease.
  - 1a. The BLM discusses options and consequences with the lease holder.
    - 1a1. Lessee can retain preference and lease the base property to a qualified applicant.
    - 1a2. Lessee can relinquish portions of the lease.
    - 1a3. If the lease is relinquished, the BLM will consider leasing all or a portion of the relinquished lease to another applicant.
    - 1a4. Pursuant to state law, if the area is "open range," the relinquishing lessee would be assuming the responsibility for fencing out another's livestock from their private land.
  - 1b. The BLM will not recognize as valid, or be bound by, any provisions that purport to make a relinquishment conditional upon specific action(s) by the Bureau.
2. Lease holder continues to pursue preference relinquishment.
  - 2a. The BLM helps lease holder prepare a Letter of Relinquishment that details the portion of the lease and interest in associated range improvements to be relinquished.
  - 2b. The BLM verifies concurrence of any base property lien holder(s) by receiving written consent of the relinquishment.
  - 2c. If preference for a portion of the grazing use authorized by the lease is relinquished, the BLM will modify the relevant lease to authorize livestock use commensurate to the retained grazing use with appropriate NEPA analysis and proposed decision. If preference for all of the grazing use authorized by the lease is relinquished, the lease will be automatically terminated without further notice.
  - 2d. If range improvement projects have been identified for removal as a result of the relinquishment process, the BLM will conduct appropriate NEPA analysis and issue a proposed decision relevant to the range improvements.
3. In the event a qualified applicant (see 3a) makes application for all or a portion of the relinquished preference, the BLM would examine and document whether livestock would have access to any campsites or the river within the boundaries of the John Day Wild and Scenic River in Segments 1, 2, or 3 (JDWSR).









Map 10: Grazing Allotments

LEGEND

\*Grazing Allotments

Grazing Allotments  
Predominately in  
North Fork John Day  
River Acquired Lands

Grazing Allotment Numbers

\*Allotment boundaries shown are approximate and  
do not imply existing or new fences

Planning Area Boundary

Administered Land

Bureau of Land Management

Forest Service

John Day Fossil Beds  
National Monument

Other Federal

State

Private or Other

U.S. DEPARTMENT OF THE INTERIOR  
Bureau of Land Management



PRINEVILLE DISTRICT

John Day Basin

Proposed Resource Management Plan  
Final Environmental Impact Statement

2012

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Map 10: Grazing Allotments



- 3a. A qualified applicant must meet the mandatory qualifications as defined in 43 CFR Section 4110.1, have legal access to the public lands applied for, and in "closed range" must control livestock from trespassing onto nearby private lands.
- 3b. If livestock have access to any campsite within JDMWSR boundaries:
  - 3b1. The BLM would determine on what portions of the allotment livestock have access to campsites within JDMWSR boundaries.
  - 3b2. The BLM would consider authorizing fence construction to eliminate livestock access to any campsite within JDMWSR boundaries. If this option is chosen, proceed to #4.
  - 3b3. The BLM would discontinue the authorization of livestock grazing on that part of the allotment where livestock have access to any campsite within JDMWSR boundaries.
- 3c. If livestock do not have access to a campsite within JDMWSR boundaries, proceed to #4.
4. In the event a qualified applicant (see 3a) makes application for all or a portion of the remainder of the relinquished preference, the BLM will examine and document whether livestock would have access to any occupied habitat of a species federally listed as endangered, proposed, or candidate for federal listing, for which a biological evaluation has not determined livestock grazing has "no effect" (currently the mid-Columbia steelhead, greater sage-grouse, or Washington ground squirrel).
  - 4a. If livestock have access to any occupied federally listed as threatened or endangered or candidate species habitat:
    - 4a1. The BLM will determine on what portions of the allotment livestock have access to occupied habitat of a species federally listed as threatened, endangered, proposed, or candidate for federal listing — for which a biologist has made a determination that livestock grazing will have anything other than a "no effect" determination.
    - 4a2. The BLM will consider (in an appropriate NEPA analysis) authorizing fence construction to eliminate livestock access to any occupied habitat of a species federally listed as threatened, endangered, proposed, or candidate for federal listing — for which a biologist has made a determination that livestock grazing will have anything other than a "no effect" determination. If this option is chosen, proceed to 5.
    - 4a3. The BLM will discontinue the authorization of livestock grazing on that part of the allotment where livestock have access to any occupied habitat of a species federally listed as threatened, endangered, proposed, or candidate for federal listing - for which a biologist has made a determination that livestock grazing will have anything other than a "no effect" determination.
  - 4b. If livestock do not have access to occupied habitat of a species federally listed as threatened, endangered, proposed, or candidate for federal listing, for which a biologist has made a determination that livestock grazing will have anything other than a "no effect" determination, proceed to #5.
5. The BLM would examine and document whether continued livestock use of all or part of the relinquished lease meets Land Health Standards and Guidelines (Standards & Guidelines).
  - 5a. Conduct Standards & Guidelines assessment if none has been previously completed.
  - 5b. Review any management changes made to allow the allotment to move toward meeting Land Health Standards and any monitoring completed following Standards & Guidelines assessment.
  - 5c. If Standards & Guidelines are being met, proceed to #6.
  - 5d. If Standards & Guidelines are not being met and current livestock management is the cause:
    - 5d1. Determine what portions of the allotment are not suitable for livestock grazing. Allow forage from those areas to be allocated to other uses.
    - 5d2. Determine what portions of the allotment are capable of making significant progress towards meeting Standards & Guidelines through administrative actions (changes in livestock numbers and/or season of use, combining allotment with an adjacent allotment . . .) or construction of range improvements; conduct appropriate NEPA; issue a proposed decision; and proceed to #6.



6. The BLM would consider re-allocating all or a part of the relinquished lease to livestock grazing according to the following priorities and modifying the relevant lease with appropriate NEPA analysis and proposed decision:
  - 6a. Other lessees with grazing preference for the allotment.
  - 6b. Other lessees with adjacent allotments where resource objectives are not being met.
  - 6c. Other lessees with adjacent allotments where resource objectives are being met.
  - 6d. Other lessees on a non-renewable basis.
  - 6e. Other resource uses.
7. In the event an application is received for all or part of an allotment that has been allocated to other resource uses, the BLM may review the decision process that led to the allotment being closed to livestock use. In the event of a change in conditions or management opportunities, the BLM may consider re-allocating all or a part of the relinquished lease to livestock grazing, conduct appropriate NEPA analysis, and issue a proposed decision.

### North Fork

For this alternative, portions of the Boneyard and Scaffold Creek allotments would be available for use on a temporary non-renewable basis. This alternative assumes that a 0.125-mile buffer on each side of currently occupied anadromous fish streams on acquired lands of the North Fork John Day River would be excluded from livestock grazing. Actual implementation may vary due to use of existing fences, season of use, herding, natural barriers, or adjustments in allotment boundaries to exclude fish streams. Grazing preference for vacant allotments would be made available to applicants based on existing grazing regulations, with priority given to adjacent landowners, adjacent Forest Service lease holders, and applicants who have grazed within the allotments in the past.

The William Healy, Wall Creek, Umatilla, Potamus, Doherty, Mud Springs, and Jericho Creek grazing allotments would remain unavailable to grazing except to control weeds, reduce fire danger, or accomplish other management objectives. Limited portions of the lands acquired under the Oregon Land Exchange Act of 2000 that are topographically connected to private or State lands would be allowed to be fenced separately from the rest of the acquired lands and grazed through minor adjustments in allotment boundaries on the Potamus, William Healy, Mud Springs, and Umatilla allotments. This is expected to affect less than 600 acres of the acquired lands. Due to the interspersed nature of private lands, public lands leased for grazing, and recently acquired public lands, the acquired lands in the North Fork allotment (approximately 640 acres) would be available for grazing.

## Recreation Opportunities

### Management Common to All Alternatives

#### **Objective R1**

Provide diverse opportunities for dispersed motorized, non-motorized, and water-based recreation activities in Special and Extensive Recreation Management Areas (see glossary), and contribute to meeting recreational demand and quality visitor experiences.

#### **Actions**

- Prohibit motorized vehicle operation, including parking or camping, in closed areas.
- In Wilderness Study Areas, allow parking only in areas signed as available for parking and/or car camping.
- Manage areas designated as Closed for non-motorized uses.
- Maintain all recreation facilities and recreation use areas for public safety and aesthetics.
- Manage the designated Wild and Scenic River Segments on the John Day River, the John Day River between Kimberly and Service Creek, and the North Fork John Day River between Monument and Kimberly (119,052 acres) as a Special Recreation Management Area (SRMA).
- Continue the policy of discouraging media coverage and public outreach that is intended to bring more users to the John Day River.



- Lower John Day River Management:
  - Improve or upgrade existing developed recreation facilities when needed to protect resources.
  - At the Oregon Trail interpretive site (west side), clarify and mark public access routes, improve parking, and pursue a Cooperative Management Agreement with the Sherman County Historical Society to manage and maintain this site.
  - Near McDonald Crossing (east side), clarify and mark public access routes.
  - Near Clarno, improve the BLM road on the west bank of the river from Clarno to Clarno Homestead, seasonally close this road to vehicle traffic north of the Clarno Homestead during the first 10 days of pheasant season, and identify a designated area on the west bank for dispersed camping.
  - On the South Fork John Day River, identify preferred camping areas and install signs and parking barriers to protect vegetation. Reevaluate the need for a campground near Ellingson Mill with toilet, tables, information board, signs, and parking barriers.
  - Use Limits of Acceptable Change to identify areas where dispersed recreation is contributing to non-attainment of RMP resource objectives or recreation experience, or both. Actions to protect resources, such as campsite hardening, rehabilitation or closure may be taken at any time, if necessary.

### **Objective R2**

Provide opportunities for commercial, competitive, educational, and organized group recreational activities.

#### **Actions**

- Applications for special recreation permits must be submitted at least 180 days in advance of the proposed use to be considered, except applications for guiding sheep hunts must be submitted at least 30 days in advance of the proposed use. Shorter time frames may be allowed upon request and approval. Applications would be considered and decisions made on a case-by-case basis.
- Continue to manage river-based commercial recreation permits according to the 2001 John Day River Management Plan.

### **Management Common to All Action Alternatives**

#### **Objective R3**

Provide diverse opportunities for dispersed motorized, non-motorized, and water-based recreation activities in Special and Extensive Recreation Management Areas, and contribute to meeting recreational demand and quality visitor experiences.

- New BLM guidance requires application of a Benefits-Based Recreation (BBR) protocol that involves identification of the Recreation Niche, Appropriate Marketing Strategy, Management Objectives, Setting, and Actions. Table 2-10 summarizes BBR Attributes and Settings, and the distribution of Settings across the planning area. The purpose of BBR management is to provide a variety of quality non-motorized and motorized recreation opportunities and experiences within specific areas of public lands referred to as Special or Extensive Recreation Management Areas (SRMA or ERMA). The SRMAs are areas where BLM would focus and invest time, management, funding and facilities. The ERMA management is limited to protecting resource values and minimizing user conflicts.

#### **Actions**

- Modify the existing John Day River SRMA boundary from 119,052 to 123,775 acres, including selected contiguous lands outside of the Wild and Scenic River boundary.
- Identify specific Recreation Management Zones (see Map 11 and glossary) within Special Recreation Management Areas. Appendix K summarizes each SRMA, and Table 2-11 summarizes recreation management by alternative.
- Designate the following new Special Recreation Management Areas:
  - The 52,033-acre North Fork John Day River SRMA consisting of public lands acquired as a result of the Oregon Land Exchange Act of 2000 and BLM managed lands north of Monument and west of Highway 395.
  - Develop campgrounds on the North Fork at School House and Skull Canyon, to be available seasonally from April 15 through November 30.



- The 60,678-acre Bridge Creek SRMA consisting of public lands south of the John Day River SRMA, west of State Route 207, north of Highway 26, and west to just beyond the Jefferson/Wheeler county line.
- The 2,617-acre Little Canyon Mountain SRMA near Canyon City.
- The 55,204-acre South Fork John Day River SRMA consisting of public lands on both sides of the river, south of Highway 26.
- Manage ERMAs to provide opportunities for local residents and visitors to pursue land-based activities in an unconfined natural setting, with an emphasis on hunting and backcountry recreation, while providing some opportunities for motorized Class I, II, and III (ATV, vehicle, and motorcycle) trail riding.
- Ensure directional signing is posted to and within Extensive Recreation Management Areas for public safety and service and to promote better understanding of the safety hazards and risks associated with recreation activities (e.g., big game hunting in the Rudio Mountain and Johnson Heights ERMA, and potential hazards associated with mining in the Dixie Creek Area).
- Ensure that public land boundaries are clearly signed to reduce trespass onto private lands, particularly where there has been a history of trespass.
  - Work with adjacent private landowners in the Rudio Mountain and Johnson Heights and Dixie Creek ERMAs to identify public and private land boundaries.
- Provide recreation sites and facilities that promote resource value protection, public safety and health, quality visitor experiences, management efficiency, and value-based returns.
- In river corridors, improve or upgrade existing recreation facilities, where needed to protect resources. New sites, in addition to the Ellingson, School House, and Skull Canyon areas, may be developed where they replace sites closed to protect resources.
- Ensure all recreation site and access development conforms with and does not change the Recreation Setting (see definition in Table 2-10).

### **Guidelines**

- When designing developed sites, use Universal Design Standards to the extent practicable while maintaining the character of the site.
- Evaluate partnership opportunities with Oregon Division of State Lands to potentially enhance Class II rock crawling opportunities in the planning area.

### **Objective R4**

Provide opportunities for commercial, competitive, educational, and organized group recreational activities.

### **Actions**

- Issue new upland-based Special Recreation Permits (SRP) as appropriate for commercial, competitive, and special events on a first come basis subject to BLM policy. Decision to issue new upland-based recreation permits would depend on the BLM's ability to complete required NEPA analyses and to administer and monitor existing and new permit proposals. Analyze proposals for new permits for compatibility with recreation management zones and travel plans, use allocations, resource protection, health and safety of visitors, social conflict management, and the public need for services. Priority for consideration of recreation permit applications would be for environmental education activities and for backlogged permit applications consistent with Recreation Management Zone objectives.
- If the number of available permits is less than the number of qualified applicants for an activity or use area, permits would be issued by competitive prospectus.
- Within Wilderness and Wilderness Study Areas, group size is limited to 12 persons except within the Wild and Scenic River boundary (16-person limit for boating parties).
- Outside Wilderness and Wilderness Study Areas, groups of more than 16 persons for overnight use or more than 20 persons for day use are required to obtain permits.



Table 2-10. Benefits-Based Recreation Setting Criteria.

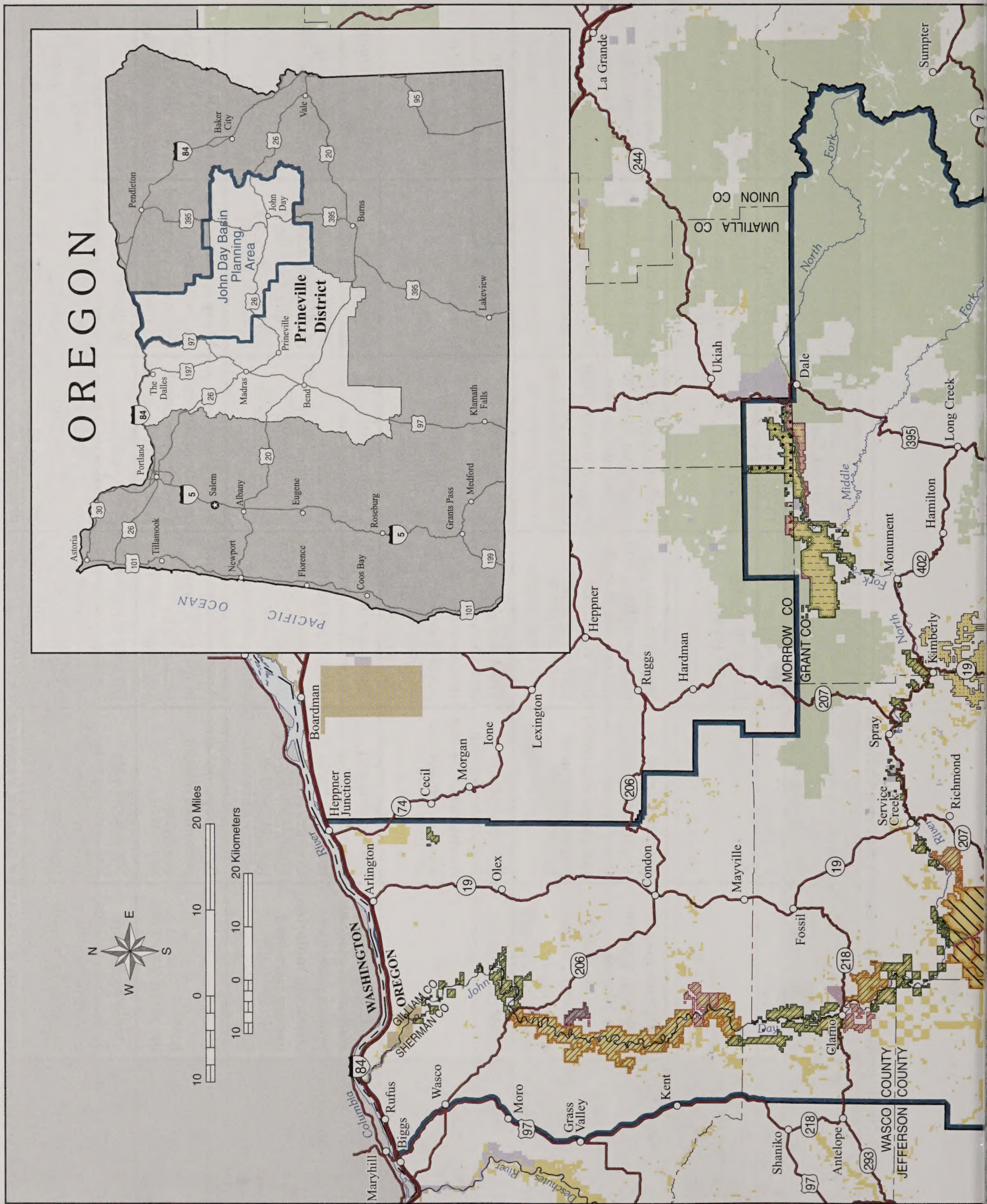
Attribute	Setting					
	Primitive (P)	Back-Country (BC)	Middle Country (MC)	Front Country (FC)	Rural (R)	Urban (U)
Examples in JDB planning area	Sutton Mountain WSA, + WSAs in the lower John Day River	Unroaded areas around Sutton Mountain	North + South Forks of the John Day River + Rudion Mountain/ Johnson Heights areas	Dixie Creek area + Golden Triangle area north of Mitchell	Little Canyon Mountain area near John Day + Canyon City	This class does not currently exist on BLM managed public land in the planning area.
Physical Character	Natural environment of fairly large size	Generally natural or natural appearing environment of moderate-large size	Generally natural or natural appearing environment of moderate-large size	Generally natural appearing environment with moderate human evidence (sights and sounds)	Substantially modified natural environment; sights and sounds of humans clearly evident	Substantially urbanized environment; sights and sounds of humans on-site are common
Vegetation	Undisturbed natural landscape	Naturally appearing landscapes having modifications not readily noticeable	Naturally-appearing landscape except for obvious primitive roads	Landscape partially modified by roads, utility lines, etc., but none overpower natural landscape features	Natural landscape substantially modified by development	Urbanized developments dominate this landscape
Remoteness	Some portions of primitive areas are 3 miles from any road	No open roads. Access to perimeter via primitive native surface routes	Primitive motor vehicle routes may occur within perimeter but at least 0.5 mile from all improved roads	On or near improved country roads, but most of area is 0.5 mile from highway	On or near primary highways, but still within a rural area	On or near primary highways, municipal streets, and roads within towns or cities
Access Routes	May have trails	Constructed or user trails	Primitive native surface routes; may be bladed	Bladed native or gravel surfaced passenger car routes	Paved roads	Paved highways
Facilities	Rustic bridges, rustic signs	Rustic bridges, rustic signs, primitive sanitary facilities	Maintained + marked trails, simple trailhead developments, improved signs; may have small, primitive campgrounds with vault toilets	Facilities such as campgrounds, restrooms, trails, interpretative signs common. Trailhead developments.	Modern facilities such as camp grounds, group shelters, boat launches, occasional exhibits	Elaborate full-service facilities such as laundry, groceries, book stores



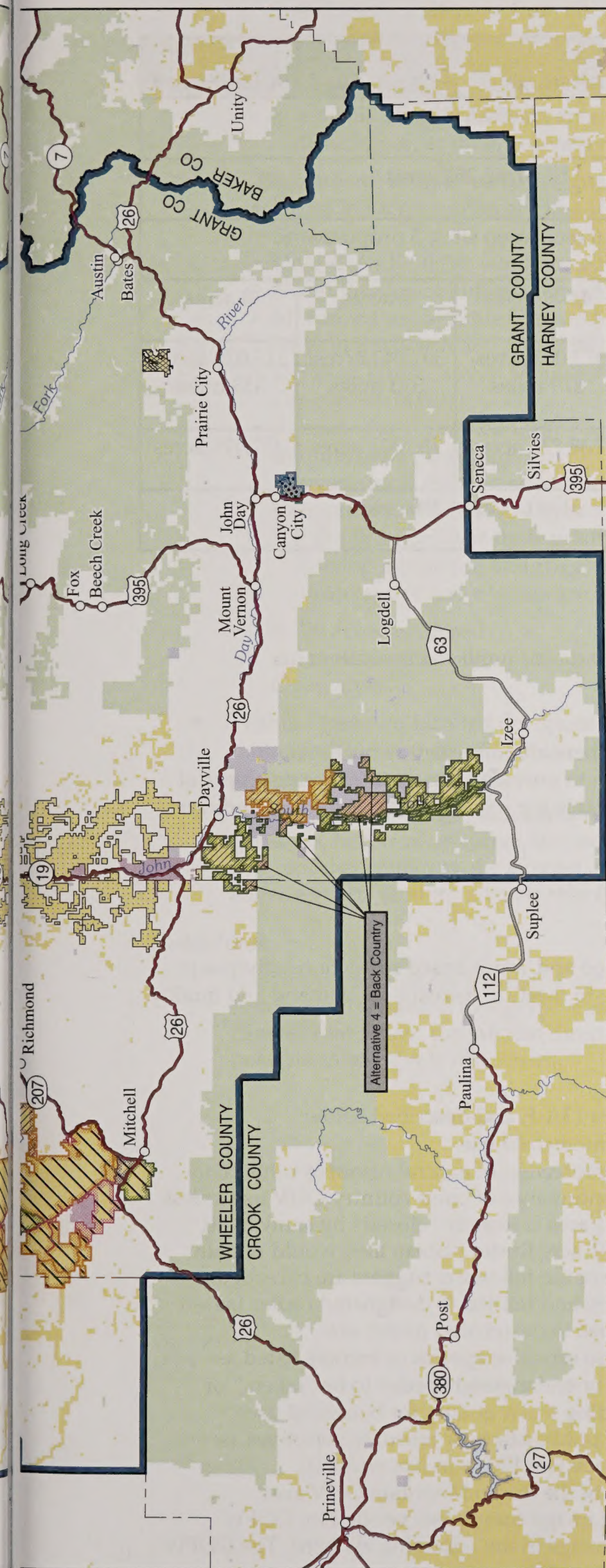
Table 2-10. Benefits-Based Recreation Setting Criteria.

Attribute	Setting					
	Primitive (P)	Back-Country (BC)	Middle Country (MC)	Front Country (FC)	Rural (R)	Urban (U)
Group Size	≤ 3 people	4-6 people	7-12 people	13-25 people	26-50 people	> 50 people
Contacts (encounters/day)	< 6	7-15	Less than 30 on travel routes	30+ on travel routes	People can be seen everywhere, but contact is still intermittent.	Other people consistently in view
Evidence of Use	Footprints may be observed, occasion trampling of vegetation (single imprints). Possible trampling at popular campsites	Footprints plus slight vegetation trampling at campsites and travel routes; infrequent litter	Vehicle tracks, occasional litter, and soil erosion in road cuts; vegetation becoming worn	Well-worn soils and vegetation, but often gravel surfaced for erosion control; litter may be frequent	Paved routes protect soils and vegetation, but noise, litter, and facility impacts are pervasive.	A busy place with what seems like constant noise; unavoidable litter
Mechanized Use	None	Mountain bikes and perhaps other mechanized use, but all is non-motorized	4WD, ATV, dirt bikes, or snowmobiles in addition to non-motorized mechanized use	2WD vehicles predominant, but also 4WD and non-motorized mechanized use	Ordinary highway auto + truck traffic is characteristic.	Wide variety of street vehicle + highway traffic is ever present
Overall Administrative Characteristics	Restrictions and controls in place to protect primitive character; motorized use not permitted	Restrictions and controls in place to protect Back-Country character; motorized use not permitted	Minimum on-site controls; restrictions present but subtle; motorized use is allowed.	Conventional motorized use provided for in construction standards and design of facilities	Considerable number of facilities designed for use by large number of people; facilities for parking provided.	Facilities for highly intensified motor use and parking available with forms of mass transit to carry people through site
Visitor Services	None available	Basic maps, but area personnel seldom available	Area brochures and maps; personnel occasionally available	Information describes areas and activities; personnel periodically available	Many opportunities for facilitated discovery; personnel do on-site education	Same as R, plus regularly scheduled on-site outdoor skills clinics, demos
Management Controls	Trailhead Kiosks; occasional signing, enforcement presence very rare	Signs/kiosks at key access points, rare enforcement presence	Occasional regulatory signing; motorized and mechanized use restrictions posted; random enforcement presence	Rules clearly posted on signs and at information kiosks; periodic enforcement presence	Regulations prominent; routine enforcement presence	Continuous enforcement to reduce user conflicts, hazards, resource damage









## LEGEND

Alternative 1 Extensive Recreation Management Area (Under Baker Resource Management Plan)

**Special Recreation Management Area Alternatives 1-5**

John Day River and South Fork John Day River

**Special Recreation Management Area Alternatives 2-5**

Bridge Creek

Little Canyon Mountain

North Fork John Day River

**Extensive Recreation Management Area Alternatives 2-5**

Dixie Creek

Rudio Mountain / Johnson Heights

John Day Basin: All BLM Lands without a Recreation Management Area Designation

## Recreation Management Zone Alternatives 1-5

Primitive

Back Country

Middle Country

Front Country

Rural

Planning Area Boundary

**Administered Land**

Bureau of Land Management

Forest Service

John Day Fossil Beds

National Monument

Other Federal

State

Private or Other

U.S. DEPARTMENT OF THE INTERIOR

Bureau of Land Management



**PRINEVILLE DISTRICT**

**John Day Basin**

**Proposed Resource Management Plan  
Final Environmental Impact Statement**

2012

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

**Map 11: Special Recreation Management Areas, Extensive Recreation Management Areas, and Recreation Management Zones**



**Table 2-11. Recreation Management by Alternative**

	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Special Recreation Management Areas (#/acres)	1/119,052 acres	5/294,580 acres			
Extensive Recreation Management Areas (#/acres)	1/337,559 acres	3/162,252 acres			
Recreation Developments	16 recreation sites, 1 proposed	16 recreation sites, 3 proposed			
Areas Open year-round to off-road use	234,272 acres	3,971 acres	4,571 acres	2 acres	0 acres
Area/miles where OHV use is allowed with limits (Limited)	155,228 acres/ 572 miles	313,668 acres/ 333 miles	313,067 acres/ 879 miles	301,043 acres/ 333 miles	315,020 acres/ 333 miles
Areas Closed year-round to off-road motorized use	67,332 acres	138,732 acres	138,732 acres	155,325 acres	137,176 acres
Class II Rock Crawling areas	0 acres	Up to about 280 acres			

**Objective R5**

Protect and enhance recreation opportunities through acquisition of lands or public access easements.

**Actions**

- Identify public lands where no legal public access exists yet there are important recreational opportunities. When opportunities arise, consider acquisition to provide access and/or create blocks of public lands. (See criteria for access easements and lands suitable for acquisition [Z-1] under Lands and Realty section.)

**Management Actions Specific to Alternative 2 (PRMP)****Objective R6**

Provide diverse opportunities for dispersed motorized, non-motorized and water-based recreation activities in Special and Extensive Recreation Management Areas, and contribute to meeting recreational demand and quality visitor experiences.

**Actions**

- Designate OHV areas as shown in Tables 2-12 and 2-23, Maps 13A-F, and described below:
  - 3,971 acres in the Rudio Plateau area as Open for off-road motorized use.
    - Respond to specific concerns of cooperators and ensure protection of natural resource values and public safety by using adaptive management to allow continuance of cross-country OHV use unless specified ecological or social thresholds are reached. This area is usually "closed" by snow to all vehicles except snowmobiles during the winter. The 3,971-acre Rudio Plateau area would remain open to cross-country motorized use unless one or more of the following triggers are exceeded, at which point the area would be closed to off-route travel and limited to designated routes (as displayed in Alternative 5). The triggers for limiting all use to designated routes are:
      - When unmitigated motorized use for > 1 year will cause sensitive species to become listed as threatened or endangered, currently listed threatened or endangered species to be "taken," or streams to become listed as 303(d) listed for not providing water quality for beneficial uses.
      - When the BLM or its partners cannot afford to protect public safety or resource objectives, or cannot resolve most conflicts with users or adjacent lands (see BMPs in Appendix B).
      - When detrimental soil disturbance exceeds 15 percent of the Rudio Mountain OHV area.
      - When, for three consecutive years, the number of elk damage complaints verified by ODFW increases and/or there is an undesirable distribution change in the wintering elk herd. The ODFW



- will verify if damage from elk on adjacent property is associated with the identified wintering population. An "undesirable" distribution change would be present if typical winter use patterns are not observed within 0.5 mile of the Open area. The intention of the three consecutive year threshold is to help rule out changes in elk behavior due to effects of short-term climatic events.
- If the BLM or its partners are no longer monitoring motorized use, special status species, soil disturbance, or other relevant resource values in this area.
  - 313,668 acres as Limited to designated routes and trails or other restrictions.
    - Up to 280 acres technical Class II rock crawling areas within two areas in the vicinity of Kimberly and Spray.
    - Only Class II OHVs would be allowed in the 2-acre South Pit area of Little Canyon Mountain.
    - North Pit area of Little Canyon Mountain would provide a trailhead and parking area.
    - Motorized use at Little Canyon Mountain would be limited to the hours between 9 a.m. and dusk daily in the North and South pits and all designated OHV routes.
    - OHVs at Little Canyon Mountain would not exceed 96 decibels (measured consistent with State of Oregon Standards).
    - As part of any planned OHV route development at Little Canyon Mountain, take measures to minimize the propagation of OHV sounds toward private residences.
    - Convene local citizens, stakeholders, and BLM to review management of OHV use in the Little Canyon Mountain SRMA 3 years from the signing of the Record of Decision.
      - If the BLM believes there is sufficient conflict, citizens and stakeholders would be asked to help develop mitigation and triggers for moving the South Pit to a Limited designation if mitigation is unsuccessful and triggers are met.
  - 138,732 acres as Closed.
    - All motorized use would be limited to designated roads and trails except within the designated Open areas.
  - Within Open and Limited designated areas, interim routes will be considered shared use trails for both motorized and non-motorized use until a full transportation management plan can be prepared to address site-specific routes.
  - Where OHVs are causing considerable adverse effects upon soil, vegetation, wildlife, wildlife habitat, cultural resources, historical resources, threatened or endangered species, wilderness suitability, other authorized uses, or other resources, the affected areas shall be immediately closed to the types of vehicles causing the adverse effects until the adverse effects are eliminated and measures implemented to prevent recurrence.

### *Guidelines*

- Use one or more of the following sound reduction techniques to limit noise from trails and pits at private residences: (1) natural topography and constructed berms to buffer OHV sounds, (2) preclusion of "hill climbs" that follow the fall line directly up slopes, and (3) location of the steepest trail grades as far as possible from private residences.



Table 2-12. Off-Highway Vehicle Designations by Alternative and Special Recreation and Extensive Recreation Management Areas.

SRMA/ERMA	Sub-Unit	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
John Day River SRMA	Horn Butte	Limited <sup>1</sup>	Limited	Limited	Limited	Limited
	Fourmile, John Day and McDonald Crossings	Fourmile Limited; others Open	Limited	Limited	Limited	Limited
	River Corridor North of Cottonwood Bridge	Open	Limited	Limited	Limited	Limited
	WSAs	Closed	Closed	Closed	Closed	Closed
	River Corridor Butte Creek to Clarno	Limited	Limited	Limited	Limited	Limited
	River Corridor Clarno to Kimberly	Open	Limited	Limited	Limited	Limited
	(No sub-unit)	Limited	Limited	Limited	Limited	Limited
South Fork John Day River SRMA	River Corridor Kimberly to Wall Creek	Open	Limited	Limited	Limited	Limited
North Fork John Day River SRMA	JV Ranch	Limited	Limited	Limited	Limited	Limited
	Remaining Upland Areas	Limited	Limited	Limited	Limited	Limited
	Sutton WSA	Limited	Limited	Limited	Limited	Limited
	Pat's Cabin WSA	Closed	Closed	Closed	Closed	Closed
	West Pat's Cabin	Limited	Closed	Closed	Closed	Closed
	Clark Canyon	Limited	Closed	Closed	Closed	Closed
	Sand Mountain	Limited	Closed	Closed	Closed	Closed
Bridge Creek SRMA	Golden Triangle	Limited	Limited	Open	Closed	Limited
	Gable Creek	Limited	Limited	Limited	Limited	Limited
	Motorized emphasis	Open	Limited	Limited	Limited	Closed
	North Pit	Open	Limited with parking area + trail head	Limited Class I and Class III OHV only	Closed	Closed
Little Canyon Mountain SRMA	South Pit	Open	Limited Class II OHV only	Open	Open	Closed



Table 2-12. Off-Highway Vehicle Designations by Alternative and Special Recreation and Extensive Recreation Management Areas.

SRMA/ERMA	Sub-Unit	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Rudio Mountain/ Johnson Heights ERMA	Rudio Plateau	Open	Open	Open	Limited	Limited
	Rest of Rudio	Open	Limited	Limited	Limited	Limited
	Johnson Heights	Open	Limited	Limited	Limited	Limited
Dixie Creek ERMA	(no sub-units)	Open	Limited	Limited	Limited	Limited
John Day Basin ERMA	Class II Rock Crawl Area (west of Kimberly)	Open	Limited	Limited	Limited	Limited
	Other areas	Open/Limited	Limited	Limited	Limited	Limited

<sup>1</sup>Limited means motorized travel limited to designated roads and trails unless otherwise noted.



## Public Health and Safety

### Objective PHS1

Management direction would minimize risk of errant firearm discharge to users of public lands and neighbors, and provide safe and compatible recreation opportunities. To meet these objectives, some public lands would be closed to all firearm discharge or firearm discharge unless legally hunting now or in the future. Decisions concerning future area closures would be based on one or more of the criteria below with the objectives of protecting resource values at risk; preserving public health, safety, and welfare; minimizing user conflicts; and maintaining consistency and cooperation.

### Actions

- Designate the Little Canyon Mountain Special Recreation Management Area as closed to firearm discharge unless legally hunting.
- Designate the John Day Wild and Scenic River corridor from Service Creek to Tumwater Falls as closed to firearm discharge from May 1 through August 31, unless legally hunting, or at any time within a developed recreation site or area.
- Future firearm discharge area restrictions would be based on the following criteria and must specify if the restriction applies to hunting or not:
  - **High Density Use Areas**—Lands may be closed to firearm discharge based on an evaluation of the present and future intensity of recreational use and other relevant factors including but not limited to: Incidences of dangerous firearm discharge (e.g., BLM firearm discharge citations, reports of individuals being hit, or nearly hit by firearm discharge), type of recreational activity, compatibility of activities, type and size of recreational groups, geography, topography, presence of facilities (parking lots, bathrooms, roads, trails, interpretive signs and exhibits), land status of surrounding properties, and ease of closure enforcement.
  - **Compatible Recreation Opportunities**—Areas with a non-motorized exclusive recreation emphasis would be closed to either firearm or firearm discharge unless legally hunting.
  - **Natural Resource Protection**—BLM-administered lands with reoccurring firearm discharge problems, or with developed facilities, or lands containing important natural and cultural resources (including but not limited to unique natural resources, sensitive species, geologic features, and historical and archaeological remains) may be closed to all firearm discharge or firearm discharge unless legally hunting.
  - **Intergovernmental Cooperation**—Cooperative closures would be considered where city, county, state or federal agencies that own, manage, or have legal jurisdiction over adjacent lands have established similar closures. These types of closures would include but are not limited to, closures adjacent to residential areas with similar city or county-wide closures, state or county parks, or areas within urban growth boundaries. Exact area and conditions of these closures would be determined through site-specific analysis, considering factors such as the ease of boundary identification and local conditions, but would generally be between 150 yards and 1 mile in depth.

Exemptions to these rules would apply to BLM and cooperating agency personnel for administrative purposes, including but not limited to, monitoring, research, law enforcement, search and rescue, and firefighting operations. The BLM may also allow exemptions on a case-by-case basis.

Firearm is defined as: "A weapon, by whatever name known, which is designed to expel a projectile by the action of powder and is readily capable of use as a weapon."

Hunting is defined as "To take or attempt to take any wildlife by means involving the use of a weapon or with the assistance of any mammal or bird [ORS 496.004 (10)]."



## Access and Travel Management

Travel management alternatives for the planning area are displayed in Maps 12A-F, 13A-F, and 14A-F for the following areas:

- Maps A - Lower John Day
- Maps B - Sutton Mountain
- Maps C - Rudio Mountain/Johnson Heights
- Maps D - South Fork John Day
- Maps E - Upper John Day River
- Maps F - North Fork John Day

Map 12 displays how the different Travel Management areas are dispersed across the planning area.

### Management Common to All Alternatives

#### **Objective T1**

Manage the travel and transportation system to support accomplishment of wildlife management objectives.

#### **Actions**

- Use existing road systems and limit new permanent road entries to protect wildlife habitat.
- Manage:
  - Designated aggregate surfaced roads.
  - Designated improved natural surface roads with graded surfaces and drainage features.
- All routes with active legal encumbrances would remain part of the designated transportation system and would continue to be managed according to those agreements. Some of these routes may be restricted to administrative access only, based upon the legal restriction in those encumbrances.
- Seasonal motorized use restrictions may be adjusted to protect site-specific resource needs.

#### **Objective T2**

Maintain public access while protecting and enhancing river values.

#### **Actions**

- Grade, surface, or widen roads as needed, including the BLM road on the west bank from Clarno to Clarno Homestead, and the road to Priest Hole.
- Continue to consolidate public land ownership patterns through purchase or exchange, acquisition of easements, and through partnership agreements with willing landowners to resolve public access issues and provide access to high value recreation opportunities. Acquire a river access point from a willing seller to replace the current private access at Twickenham.
- Coordinate with Oregon Parks and Recreation Department to ensure that road and access improvements are consistent with State Scenic Waterway regulations, where applicable.
- Continue to improve the ditches and culverts on the South Fork Road as needed.

### Management Common to All Action Alternatives

#### **Objective T3**

Provide public and administrative access in a manner that attains resource objectives and supports the agency's mission.

The interim transportation network is derived from the Prineville District Geographic Information System (GIS) data base; published maps showing state, county, and Forest Service roads; and local knowledge of route conditions, source (power line, fence line, pipe line, etc.) and level of use.



The final transportation network (Transportation Management Plan or TMP) will assess present and future access needs, and evaluate existing trails, primitive roads, and other roads regardless of interim status.

### **Actions**

- Identify the following aggregate surfaced roads and main collector roads as part of the permanent transportation system: North Fork John Day, South Fork John Day, Franks Creek, Holmes Creek, Sunflower Creek, Deer Creek, Indian Creek, and Priest Hole.
- Develop a Transportation Management Plan within five years after a signed record of decision for this RMP. The TMP will describe the final transportation system and guidelines for managing, monitoring, and maintaining the system.
  - Additional data is needed to field verify actual ground condition of existing routes with GIS data and published maps.
  - Development of a sign plan will meet the BLM Sign Manual 9130 and the BLM Sign Guidebook requirements.
  - Education/public information and enforcement plans will be developed after the TMP is signed.
- Criteria for prioritizing areas to be analyzed first:
  - Areas with large blocks of public lands with legal public access.
  - Areas with high public demand.
  - Areas not attaining resource objectives (e.g., interim road densities are currently higher than those prescribed for the final transportation system in the Upper John Day Travel Management Area for all action alternatives) (Tables 2-13 and 2-21). This area currently has the highest concentration of rights-of-way for mining and private access.
- Each route and its management objective will be assessed, and one or more of the following determinations will be made:
  - Keep the route.
  - Rehabilitate (see glossary) all or parts of the route.
  - Obliterate (see glossary) all or parts of the route.
  - Fully decommission (see glossary) all or parts of the route.
  - Close the route.
  - Place seasonal restrictions on the route.
  - Change the use classification of the route (e.g., road, primitive road, fly-in access, and trail).
  - Set maintenance intensity that is reflective of management objective.
- If a road is changed to a trail, the trail would further be classified for a specific type of use (e.g., pedestrian, equestrian and other pack animals, mountain bike, OHV classification, etc.).
- When making determinations of which routes will be part of the final transportation plan, balance impacts to resources (e.g., aquatics, soil erosion, wildlife habitat) with the need to provide access for public use, grazing allotments, fire suppression activities, recreation opportunities, timber hauling, site-specific rights-of-way actions, etc.). Criteria used to make these determinations include:
  - Apply the Aquatic Conservation Strategy decision tree (see the Aquatics section).
  - Provide motorized and non-motorized loop opportunities with opportunities for non-repeated use.
  - Provide access to recreation sites, trail heads, and river access points.
  - Provide a range of difficulties and experiences for motorized and non-motorized users.
  - Provide for public access to large tracts of public lands, including opportunities to link with other agencies' roads (e.g., USFS, County, State, etc.).
  - Keep routes with existing right-of-way or easements, and rehabilitate as needed.
  - Provide for emergency ingress and egress needs.
  - Screen roads within 0.25 miles of streams, springs, and rivers for cultural resource and wildlife protection.
  - Keep access to tribal resource sites: Usual and accustomed fishing locations, plant gathering areas and religious sites, where known.
  - Keep historic use sites.
  - Close routes where there is an opportunity to expand wildlife refugia.
  - Close routes that conflict with wildlife connectivity (see glossary or Wildlife section) areas.
  - Close routes adjacent to sensitive plants.
  - Close routes adjacent to key wildlife habitat (caves, cliffs, and nests).
  - Close duplicate routes that service the same areas.



- Look for opportunities to improve visual resources.
- Be consistent with special management area goals.
- Keep routes needed to maintain facilities and range improvements.
- Consider future proposed management actions.
- Utilize route density standards (see Table 2-13) and high road density “hot spots.”
- Avoid known cultural/paleontological sites.
- Apply Water Erosion Prediction Project (WEPP) model to filter area with high erosion probability, and close or mitigate roads with active erosion.
- Close or mitigate roads in sensitive soil areas.
- When creating Travel Management Plans for areas or assessing individual routes, consider the following criteria to decide if a route should be a shared use or single use:
  - Consistency with the “Social Qualities” from the Recreation Setting Matrix for the Recreation Setting.
  - Increasing amount or unacceptable reports of conflict (e.g., accidents, close calls, disgruntled users, and traffic counts) that cannot be mitigated.
  - User displacement from either a shared use or single use designation.
  - Route management should be consistent with connecting public routes managed by other agencies.
- To provide direction for the future Transportation Management Plan, prescribed road densities were identified by Travel Management Area based on the need to minimize impacts to key wildlife habitats and provide access consistent with recreation management objectives. Average prescribed road densities (miles of road per square mile) by Travel Management Area for all action alternatives are displayed in Tables 2-13, 2-21, and 2-22 for the PRMP (Alternative 2); Alternative 3; and Alternative 4. Alternative 5 is the same as the PRMP. (Note: Within the Travel Management Area, specific areas such as key wildlife habitats may have road densities of 0.00, and other areas within the Travel Management Area or an area containing several roads that intersect may have a road density much greater than the average road density for the Travel Management Area.)
  - Average road densities that would result from each alternative’s interim transportation systems (Maps 13A-F and 14A-F) are also displayed in these tables. Within these areas, the road density can be higher or lower, but the BLM land within the prescribed area would average at or below the prescribed maximum. In Wildernesses and WSAs, the average prescribed route densities (0 miles per square mile) applies only to motorized and mechanized routes.
- Provide routes for administrative uses.
- The TMP is not intended to provide evidence bearing on or addressing the validity of any R.S. 2477 assertions. The R.S. 2477 rights are adjudicated through separate judicial and administrative processes that are entirely independent of the BLM’s planning process. Consequently, travel management planning should not take into consideration R.S. 2477 assertions or evidence. Travel management planning should be founded on an independently determined purpose and need that is based on resource uses and associated access to public lands and waters. At such time as a decision is made on R.S. 2477 assertions, the BLM would adjust its travel routes accordingly.

**Table 2-13. Interim and Prescribed Route Density Standards for Alternative 2.**

<b>Travel Management Area</b>	<b>Interim Route Density (mile/square mile)<sup>1</sup></b>	<b>Average Allowable Route Density (mile/square mile)<sup>2</sup></b>
Lower John Day	0.4	1.17
Sutton Mountain	0.7	0.96
Rudio Mountain	0.4	1.81
South Fork John Day	0.6	1.65
Upper John Day	1.5	1.48
North Fork John Day	0.8	1.77

<sup>1</sup>Interim roads are identified on Maps 12A-F, 13A-F, and 14A-F. Interim route densities are not an objective or standard, but rather a way to represent the amount of roads and trails that were selected as interim for this alternative.

<sup>2</sup>Prescribed route densities are displayed on Maps 12A-F, 13A-F, and 14A-F. Average allowable route density is an average across the analysis area based on prescribed route density standards (0 miles per square mile to 2 miles per square mile), and depicts the average if all lands are managed at the maximum allowable density. Analysis for prescribed route density standards was applied to BLM lands only.



- Use Best Management Practices for road construction and maintenance (see Appendix B).
- Develop a user map for each ERMA, with numbered routes to help visitors avoid trespass on these private lands.
- In the Dixie Creek area, designate roads and trails for shared use and non-motorized trails, particularly mountain bike trails if conflicts with private lands occur, or demand for recreation opportunities increases.
- Vehicles may travel up to 100 feet from roads in areas closed to off-road use or limited to designated roads to park or camp, except as follows:
  - If ground conditions are such that driving off the road would create ruts in the landscape.
  - In Wilderness Study Areas, designated parking and camping areas will be signed.
  - Within the WSR corridor, off-road vehicle travel is limited to 50 feet from roads.
  - Off-road vehicle use is prohibited in live water of reservoirs, streams, ponds, and wetlands and should avoid riparian areas.
  - Wilderness – No off-road use.
- No motorized or mechanized travel is allowed within the boundaries of Spring Basin Wilderness.
- Within the Open and Limited designated areas, the interim routes would be shared by both motorized and non-motorized use, unless otherwise posted, until a final transportation management plan can be prepared to designate site-specific routes. Road and trail placement in the final transportation plans for specific areas would take into account the concerns of landowners living adjacent to the area.
- Consistent with 43 CFR 8342.1, new routes would be located or designed to minimize adverse effects upon soil, vegetation, wildlife, wildlife habitat, cultural resources, historical resources, threatened or endangered species, wilderness suitability, other authorized uses, or other resources. Where off-highway vehicles are causing or will cause considerable adverse effects, the affected areas shall be immediately closed to the type(s) of vehicle causing the adverse impact until the adverse effects are eliminated and measures implemented to prevent recurrence.
- Snowmobiles and aircraft are motorized vehicles and would be required to abide by the area designations and other restrictions governing motorized vehicles.
- The landing of aircraft on BLM administered lands, other than designated routes, is prohibited without prior BLM authorization.
- Where critical wildlife ranges bisect individual roads, creating a split designation (seasonally open/open), locations of seasonal motorized use restrictions may be necessary to facilitate vehicle turn-around and make sensible route identification.
- Route density standards include all open roads and designated trails across BLM-administered lands regardless of route jurisdiction (e.g., BLM, State, County, etc.). Apply these route density standards on a project by project basis to the interim transportation system until the final transportation management plan is written. Until either of these occurs, all interim routes would remain open to public use.
  - For purposes of calculating route density, an open route includes all designated nonmotorized trails and all motorized routes, designated or not, that receive more than one trip per month or is determined to be in a condition where there are no physical barriers that would preclude motorized use, regardless of seasonal closures.
  - Where actual route densities are lower than the route density standards for an area, the BLM has the flexibility to designate additional routes providing final transportation plan decision criteria are applied to the process.
  - Where existing road densities exceed the prescribed road density limits, the BLM may only add new or temporary roads providing that a transportation plan is completed for the project area and this plan moves toward the prescribed road density limit. To move toward the prescribed road density, more roads must be closed, decommissioned, or obliterated than added to the transportation system. The project area for this purpose shall be defined as the contiguous block of land managed by the BLM for which the proposed new or temporary road is located within.

### Guidelines

- Closed roads that are not part of the interim or final transportation system may be used administratively by the United States of America and its assigns to conduct official business if the road is determined to be suitable for the proposed use. An assign includes but is not limited to government contractors, grazing



lessees, right-of-way permittees, timber sale purchasers, and mining claimants. Administrative use by persons other than federal employees will require a limited use entry permit to be issued by the BLM. These limited use entry permits are for the United States of America's assigns to conduct official business only. This does not guarantee that an assign would have unlimited access rights on routes otherwise closed to the general public.

## Management Actions Specific to Alternative 2 (PRMP)

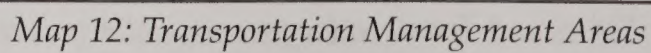
### Objective T4

Provide public and administrative access in a manner that attains resource objectives and supports the agency's mission.

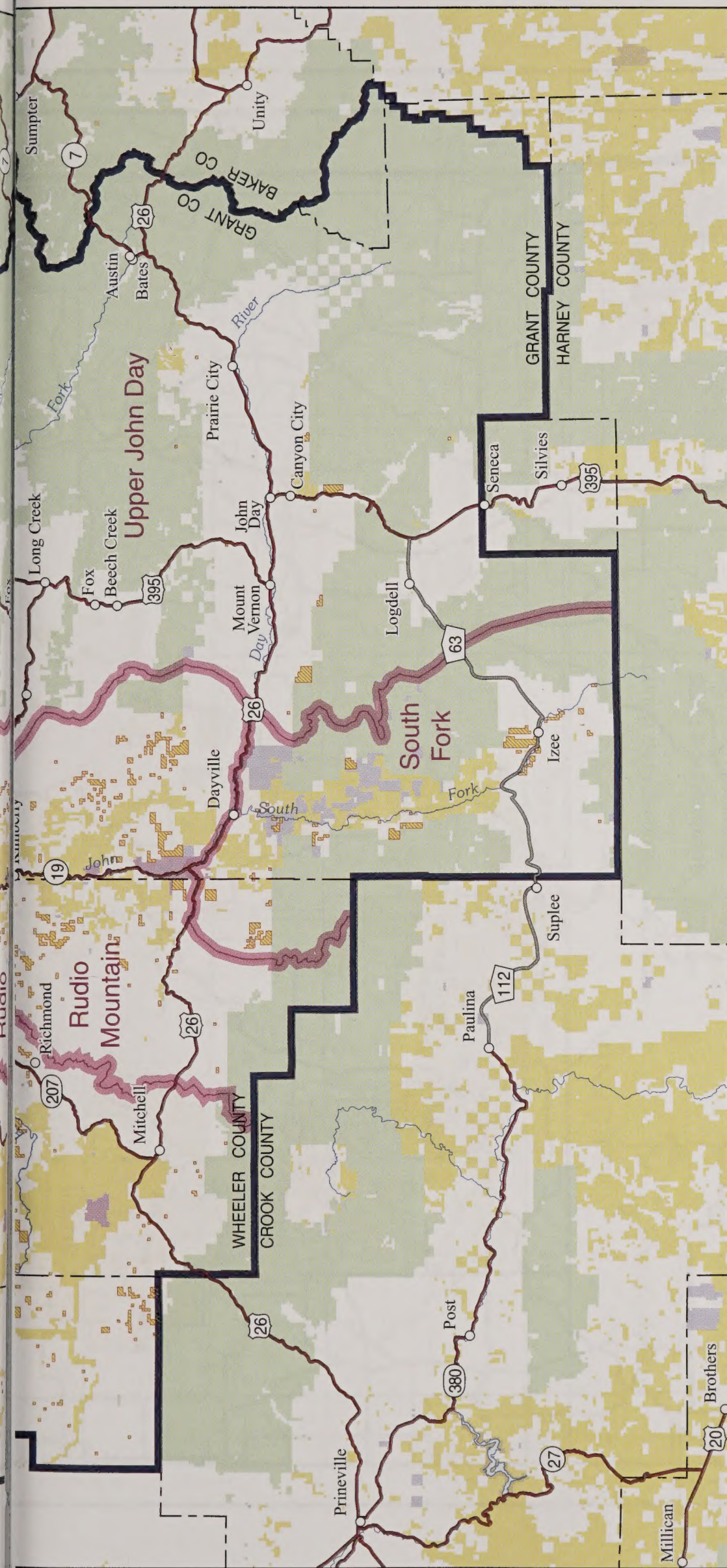
### Actions

- Designate an interim travel management system containing 333 miles of routes open for public use, as shown on Maps 13A–F, and listed in Table 2-23. This total includes 109 miles of routes that cross BLM-managed land but are managed by other agencies, the state, or counties. Of the 224 miles managed by the BLM:
  - Maintain as open year-round 86 miles of gravel surfaced and natural improved surface roads.
  - Maintain as open seasonally 138 miles of primitive roads.
- Manage as closed (do not include as part of the interim transportation system) 409 miles of routes. Of these 409 miles,
  - 241 are short segments surrounded by private land with no public access rights.
  - 168 miles are either duplicate routes providing access between the same starting points and the same ending points, or they consist of short, ill-defined, user-created routes, utility routes, short dead end routes, or routes leading to private land but not currently authorized as rights-of-way.
    - Criteria for exclusion or selection of interim roads:
      - If portions of a road limit the physical function of a stream, then that road is excluded from the transportation system and an alternate route is identified. Routes identified for closure, rehabilitation, or rerouting due to aquatic concerns are shown on Maps 13A–13F.
      - If a road has already been closed on an interim basis then the road is excluded from the interim transportation system.
      - If a road is a two-track, user-created primitive route that is ill-defined on the ground, the road is excluded.
      - If multiple roads start and end at the same location, only one road is selected for the interim system based on a BLM specialist's knowledge of the roads.
      - If a road dead ends at a private land holding and there is no right-of-way, the road is excluded until a right-of-way is issued.
      - Do not include roads on small parcels that have no public/BLM access.
      - Include roads on large BLM parcels that have no public/BLM access.
- Interim and prescribed route density standards (limits) under this alternative are shown in Table 2-13.









## LEGEND

- Transportation Management Area
- No Known Public Legal Access

\*Note: Legal access is defined as vehicle access to any one point of contiguous BLM lands. It DOES NOT infer any rights for use of routes not designated as open in the interim or final Travel Management System, the right to use an OHV off route, nor does it infer any rights for access across private lands. Some parcels may be accessed through state or federal lands.

Planning Area Boundary

### Administered Land

- Bureau of Land Management
- Forest Service
- John Day Fossil Beds National Monument
- Other Federal
- State
- Private or Other

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## PRINEVILLE DISTRICT

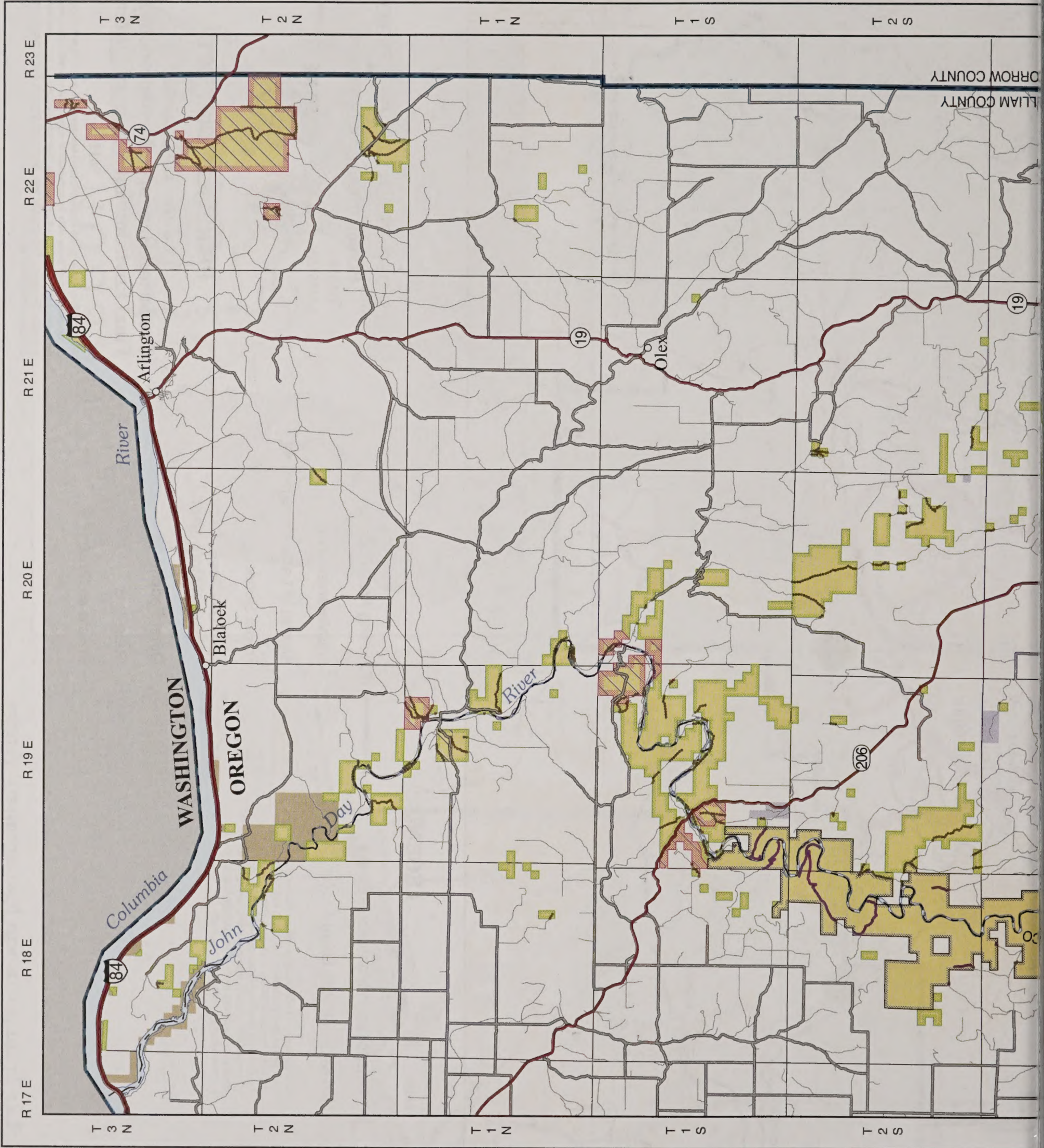
### John Day Basin Proposed Resource Management Plan Final Environmental Impact Statement

2012

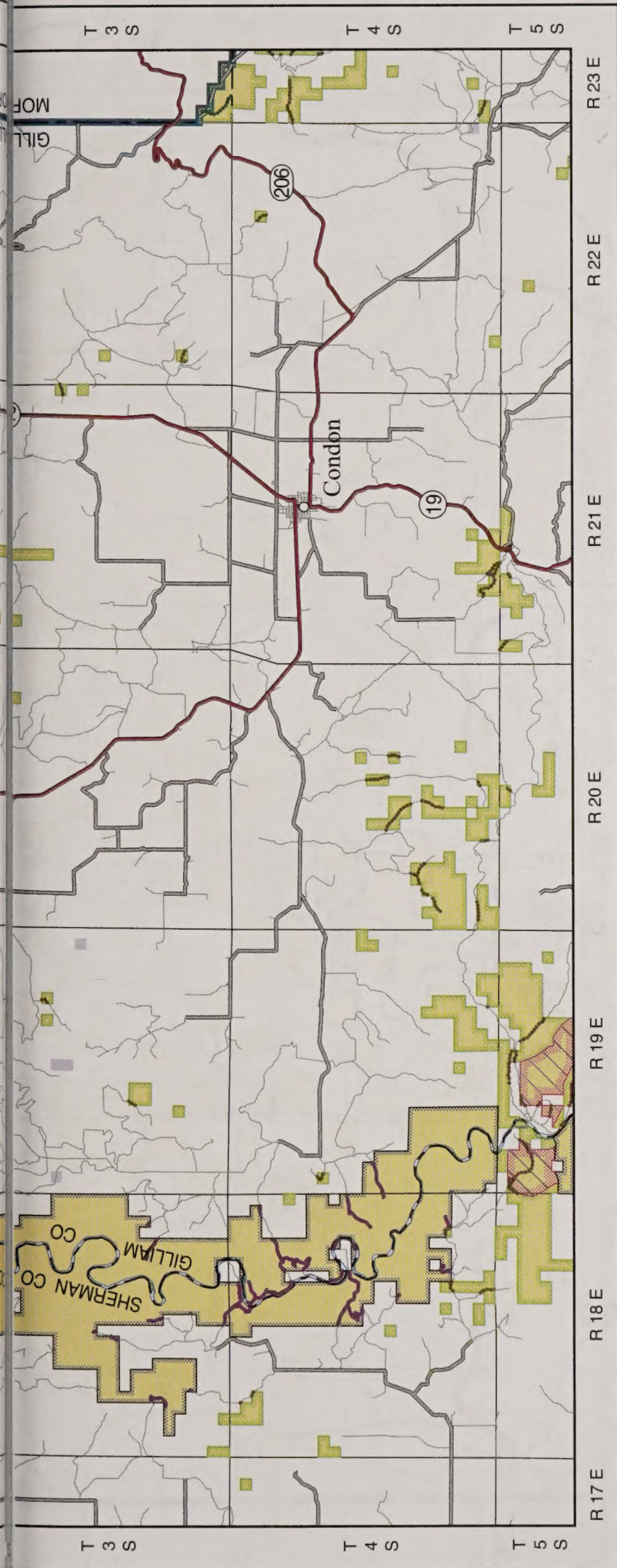
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Map 12: Transportation Management Areas









## LEGEND

### Transportation

- Open Road
- Open Road Seasonally
- Closed Road Year-round
- Interstate
- State Highway
- County Road
- Private Road, Closed to public use or unknown

### Off Highway Vehicle Designation

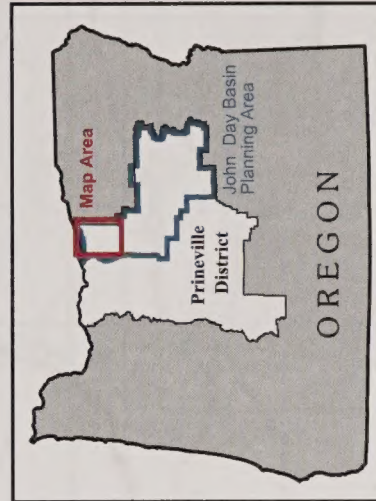
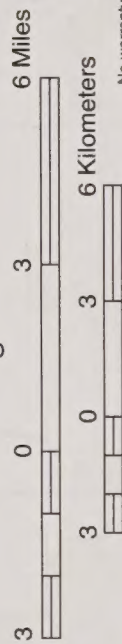
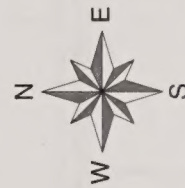
- Open- Motorized Vehicle Use Permitted Off Road
- Closed- Motorized Vehicle Use Off Roads Prohibited
- Limited- Motorized Vehicle Use Limited to Designated Roads and Trails, Seasonally, or by Type of Vehicle
- Seasonal Motor Vehicle Restrictions

### Planning Area Boundary

### Administered Land

- Bureau of Land Management
- Other Federal
- State
- Private or Other

*\* Note: Access to some areas listed as open may require landowner permission to cross private lands*



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**PRINEVILLE DISTRICT**

**John Day Basin**

**Resource Management Plan**

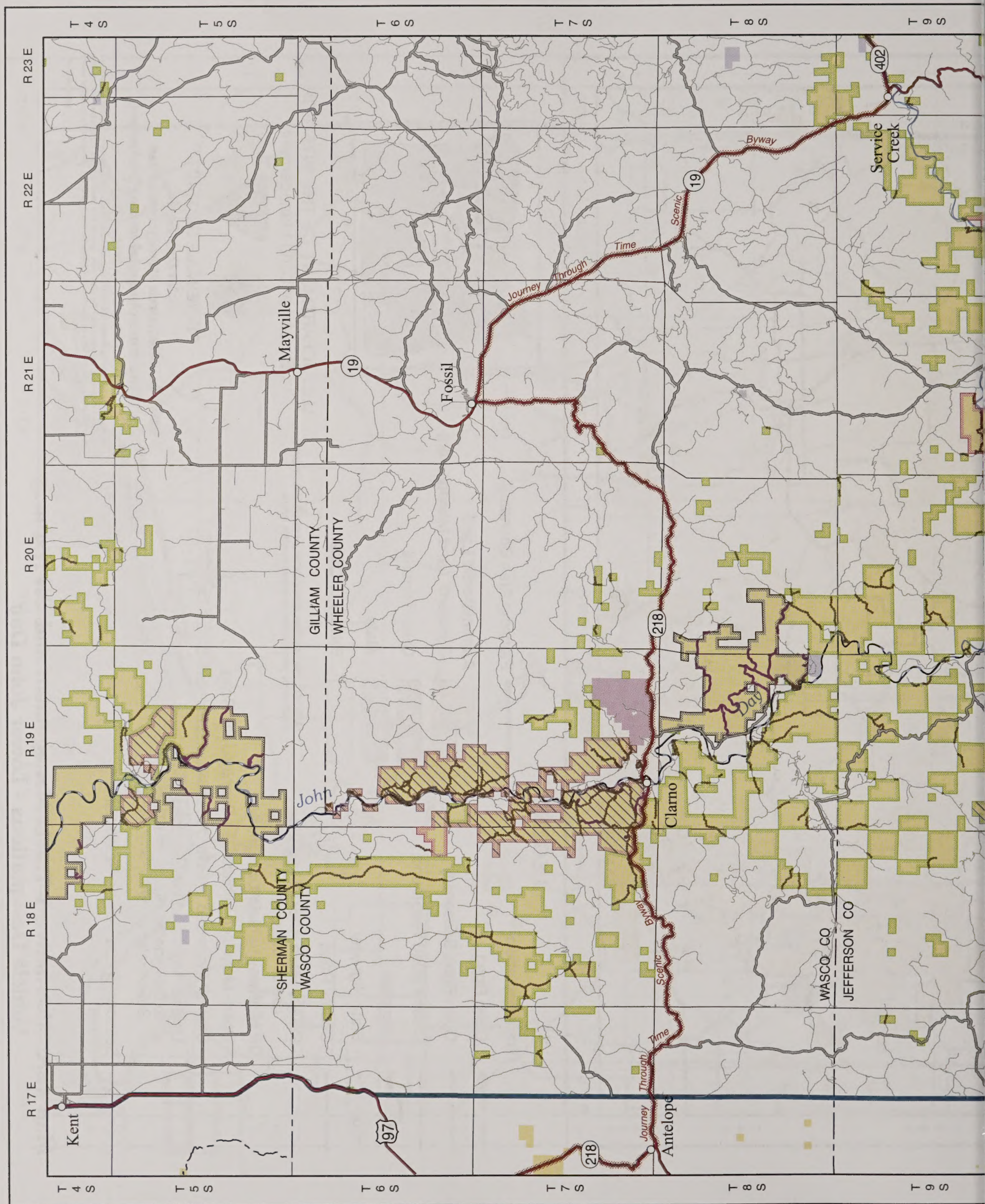
**Final Environmental Impact Statement**

2012

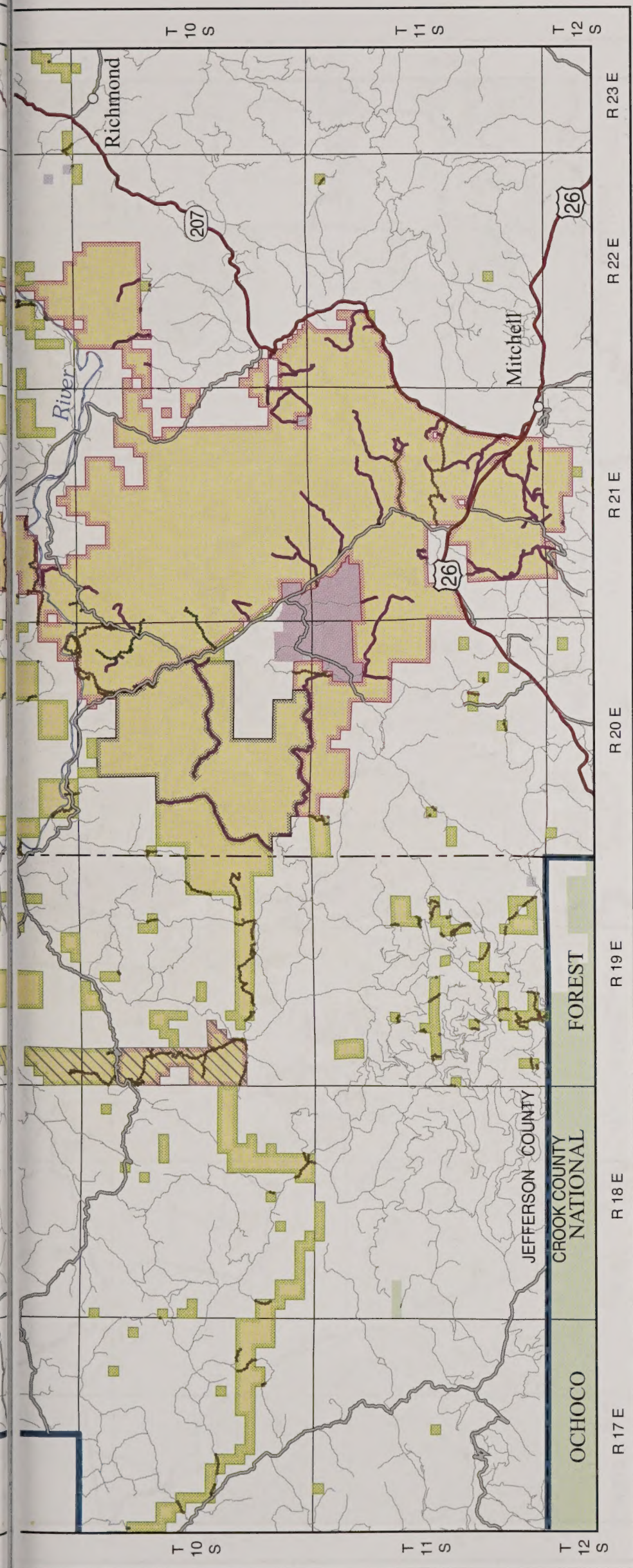
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**Map 12A: Alternative 1 Travel Management and Off Highway Vehicle Designations - Lower John Day**









## LEGEND

### Transportation

- Open Road
- Open Road Seasonally
- Closed Road Year-round
- U.S. Highway
- State Highway
- County Road
- Private Road- Closed to public use or unknown

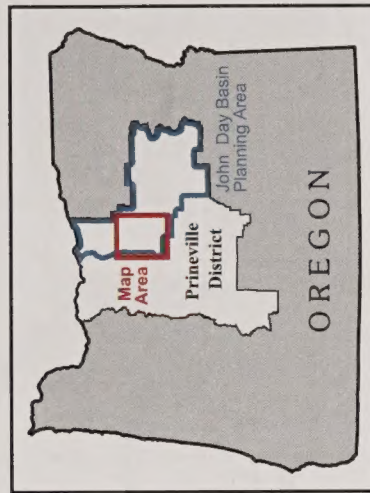
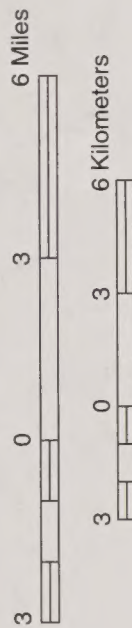
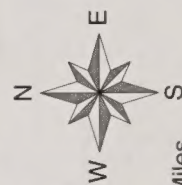
### Off Highway Vehicle Designation

- Open- Motorized Vehicle Use Permitted Off Road
- Closed- Motorized Vehicle Use Off Roads Prohibited
- Limited- Motorized Vehicle Use Limited to Designated Roads and Trails, Seasonally, or by Type of Vehicle
- Seasonal Motor Vehicle Restrictions

### Planning Area Boundary

- Administered Land**
  - Bureau of Land Management
  - Forest Service
  - John Day Fossil Beds National Monument
  - State
  - Private or Other

\* Note: Access to some areas listed as open may require landowner permission to cross private lands



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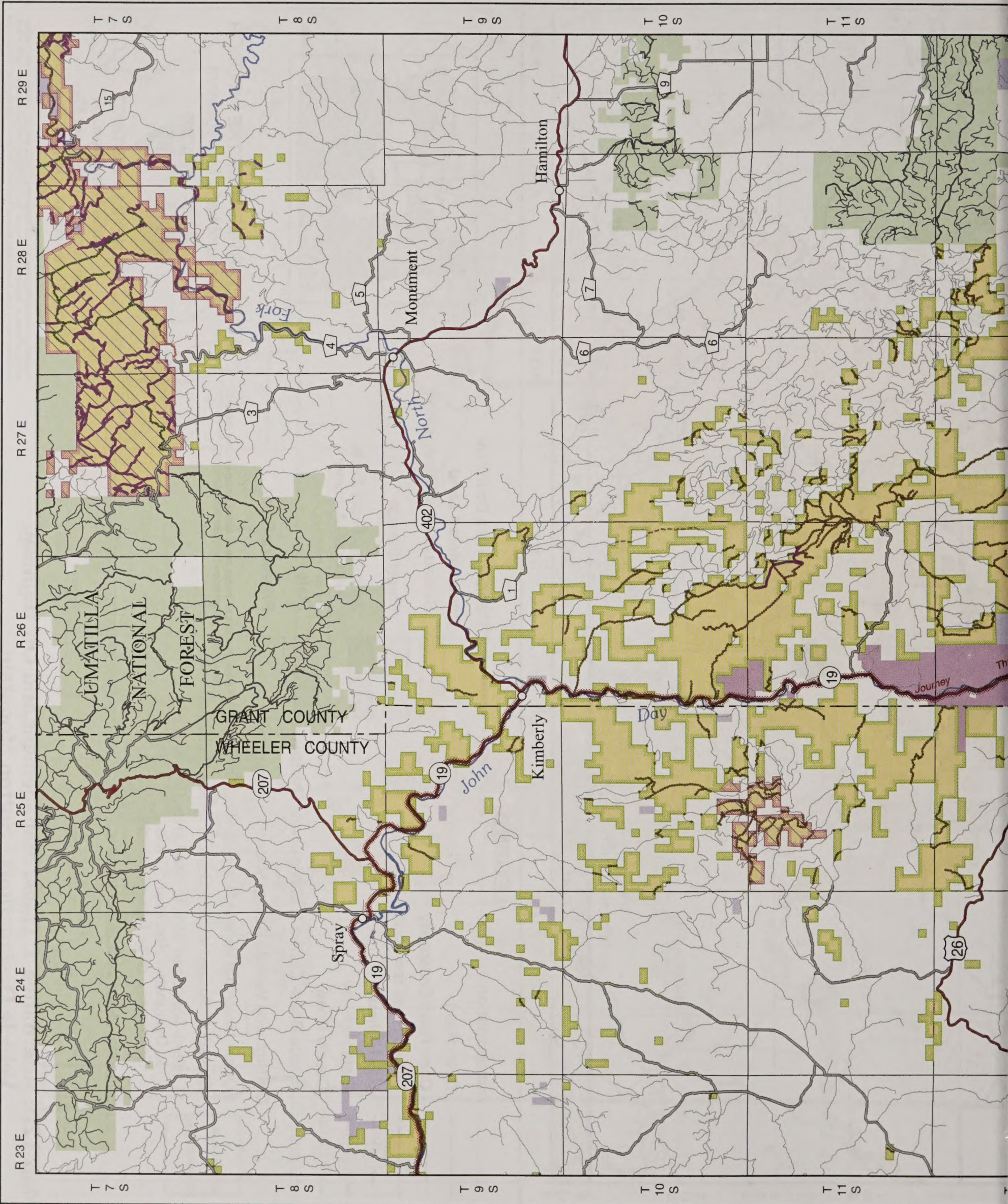
**PRINEVILLE DISTRICT**  
**John Day Basin**  
**Resource Management Plan**  
**Final Environmental Impact Statement**  
**2012**

**Map 12B: Alternative 1 Travel Management and Off Highway Vehicle Designations - Sutton Mountain**

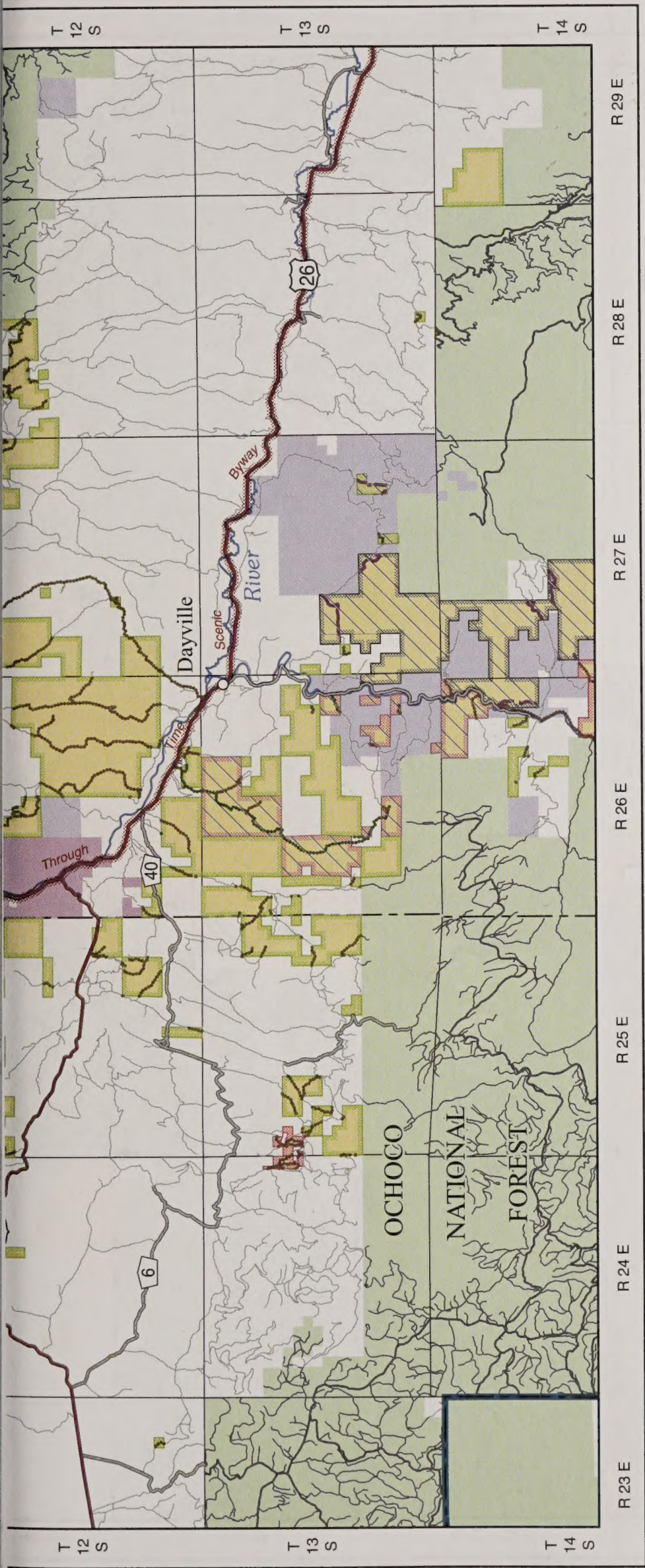
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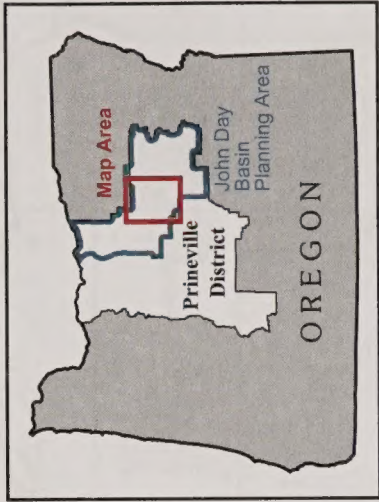






LEGEND

- Transportation**
- Open Road
  - Open Road Seasonally
  - Public Trail, Non-Motorized
  - County Road - Open Seasonally
  - Closed Road Year-round
  - U.S. Highway
  - State Highway
  - County Road
  - Forest Service Primary Route
  - Forest Service Secondary Route
  - Private Road - Closed to public use or unknown
- Off Highway Vehicle Designation**
- Open - Motorized Vehicle Use Permitted Off Road
  - Closed - Motorized Vehicle Use Off Roads Prohibited
  - Limited - Motorized Vehicle Use Limited to Designated Roads and Trails, Seasonally, or by Type of Vehicle
  - Seasonal Motor Vehicle Restrictions
- Planning Area Boundary**
- Planning Area Boundary
- Administered Land**
- Bureau of Land Management
  - Forest Service
  - John Day Fossil Beds National Monument
  - State
  - Private or Other
- \* Note: Access to some areas listed as open may require landowner permission to cross private lands*

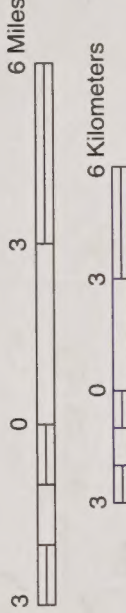
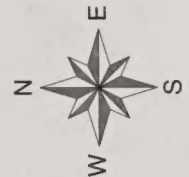


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PRINEVILLE DISTRICT  
John Day Basin

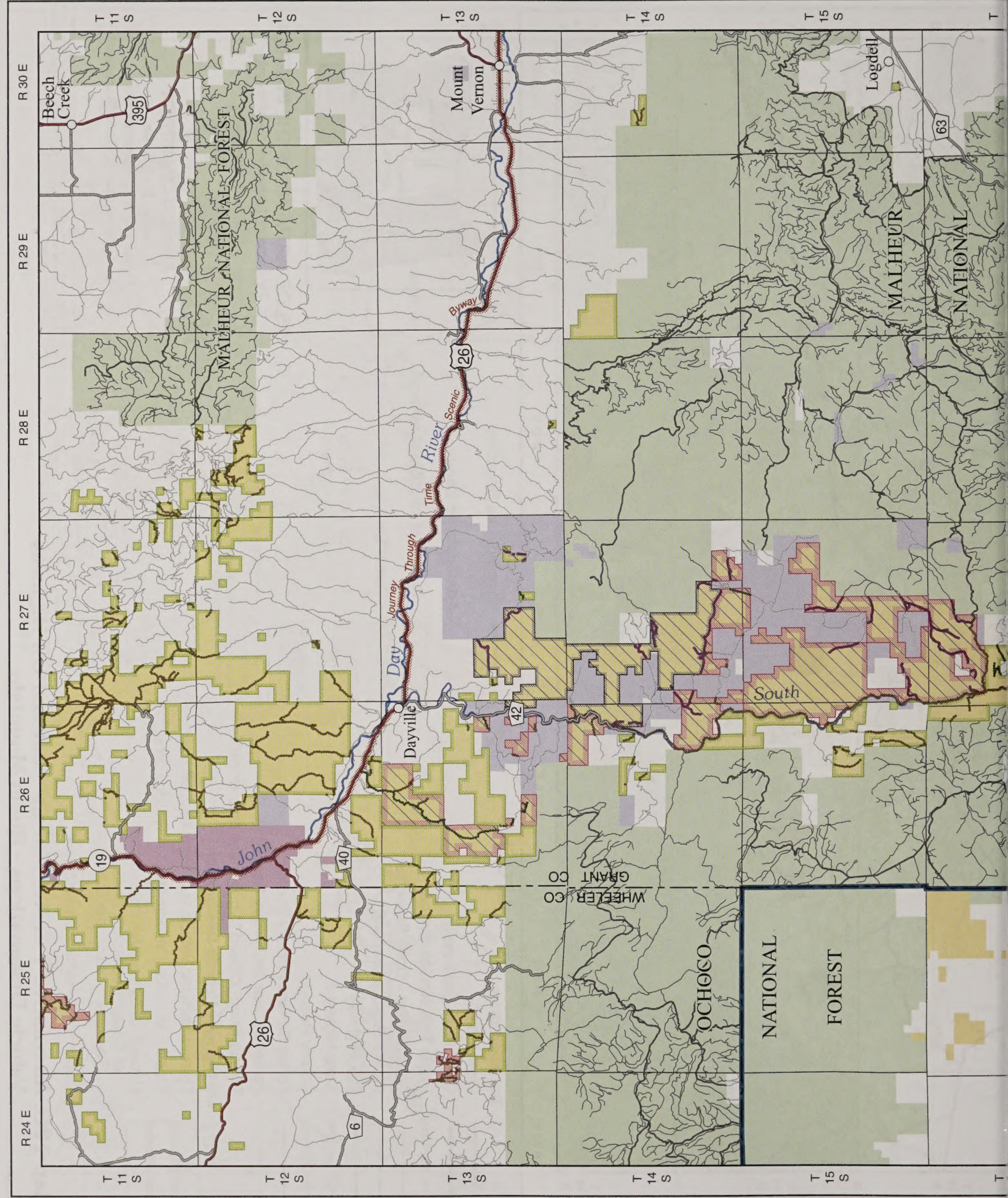
Resource Management Plan  
Final Environmental Impact Statement  
2012



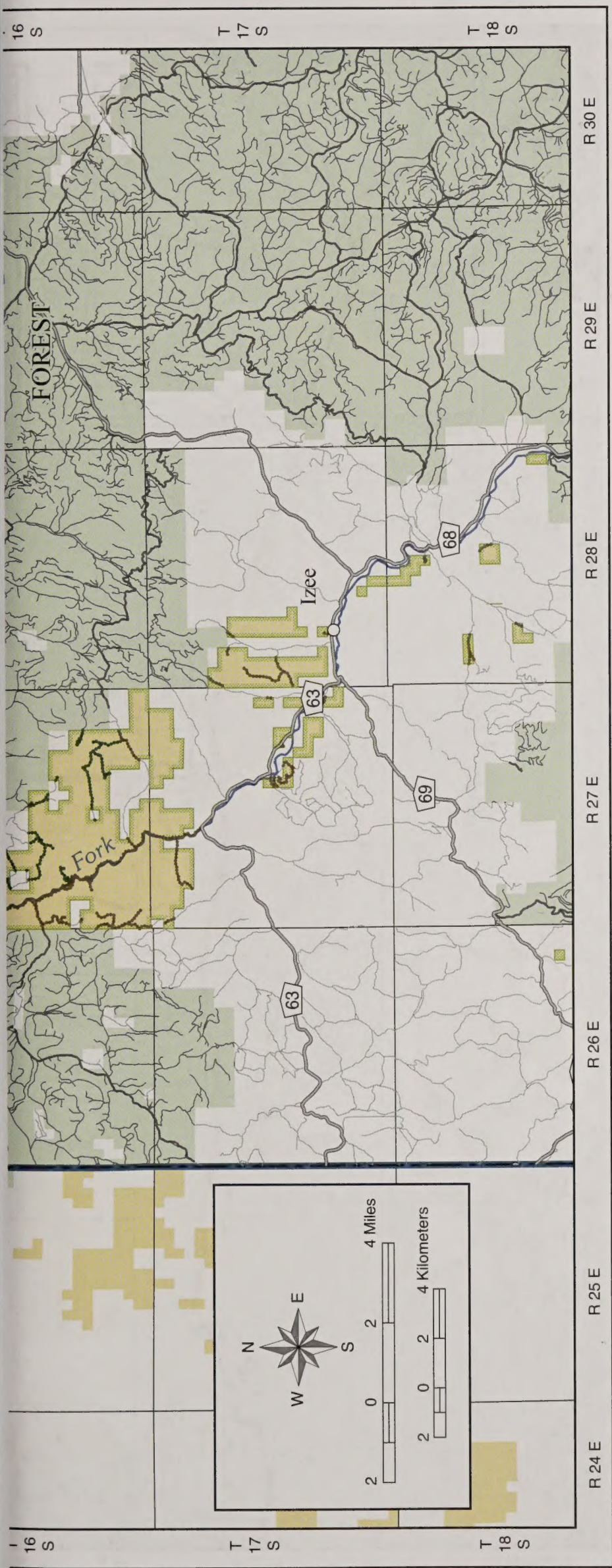
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Map 12C: Alternative 1 Travel Management and Off Highway Vehicle Designations - Rudio Mountain









LEGEND

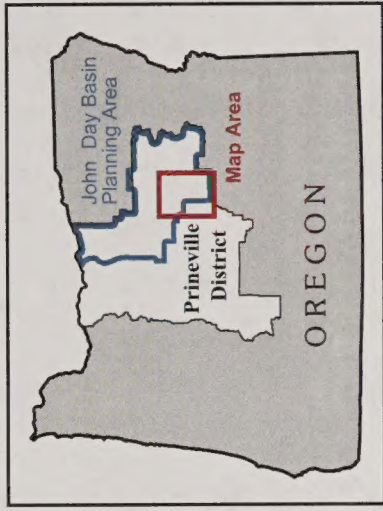
- Transportation**

  - Open Road
  - Open Road Seasonally
  - Closed Road Year Round
  - U.S. Highway
  - State Highway
  - County Road
  - Forest Service Primary Route
  - Forest Service Secondary Route
  - Private Road- Closed to public use or unknown
- Off Highway Vehicle Designation**

  - Open- Motorized Vehicle Use Permitted Off Road
  - Closed- Motorized Vehicle Use Off Roads Prohibited
  - Limited- Motorized Vehicle Use Limited to Designated Roads and Trails, Seasonally, or by Type of Vehicle
  - Seasonal Motor Vehicle Restrictions
- Administered Land**

  - Bureau of Land Management
  - Forest Service
  - John Day Fossil Beds National Monument
  - State
  - Private or Other
- Planning Area Boundary**

  - Planning Area Boundary
- \* Note: Access to some areas listed as open may require landowner permission to cross private lands**



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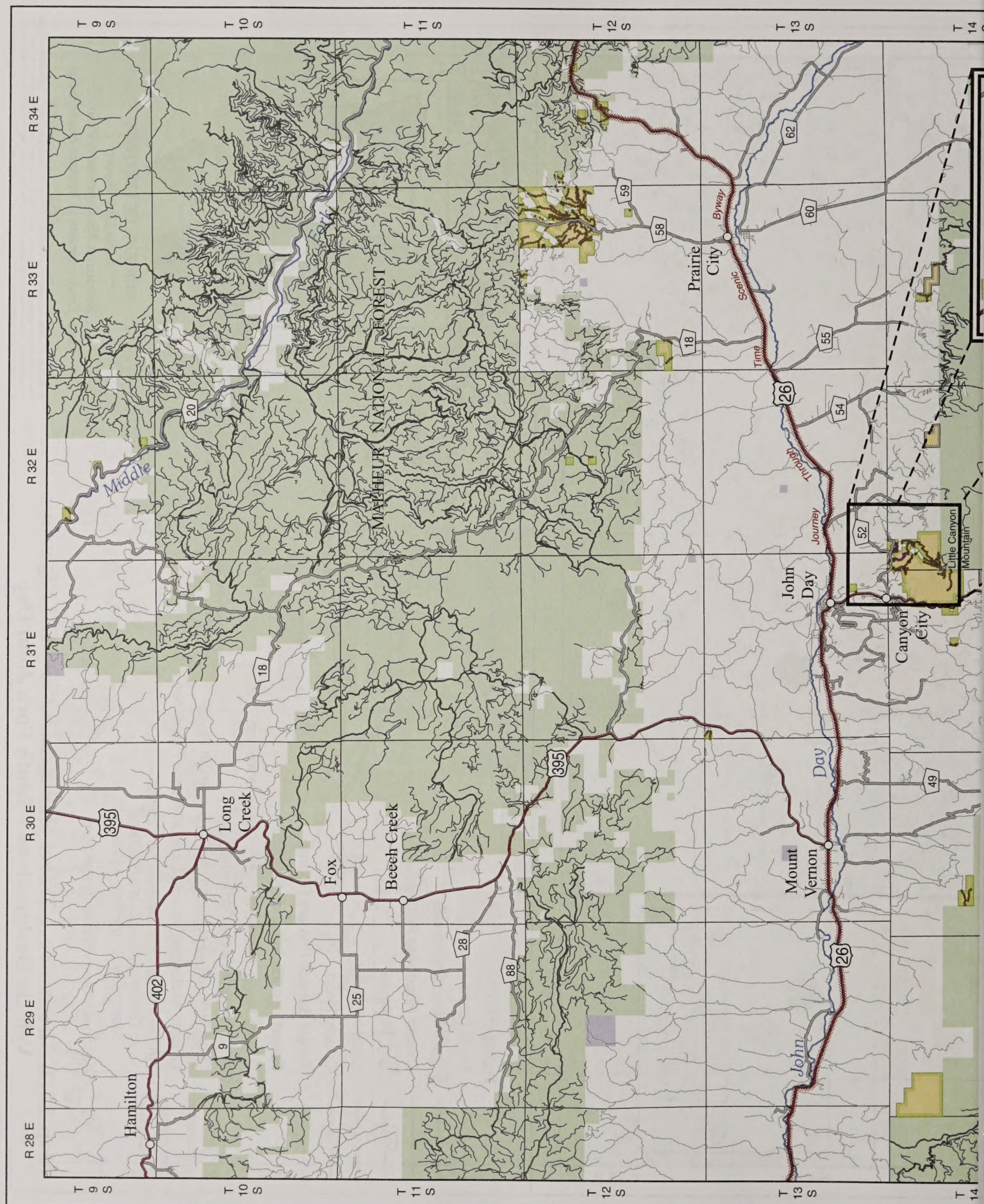


**PRINEVILLE DISTRICT**  
**John Day Basin**  
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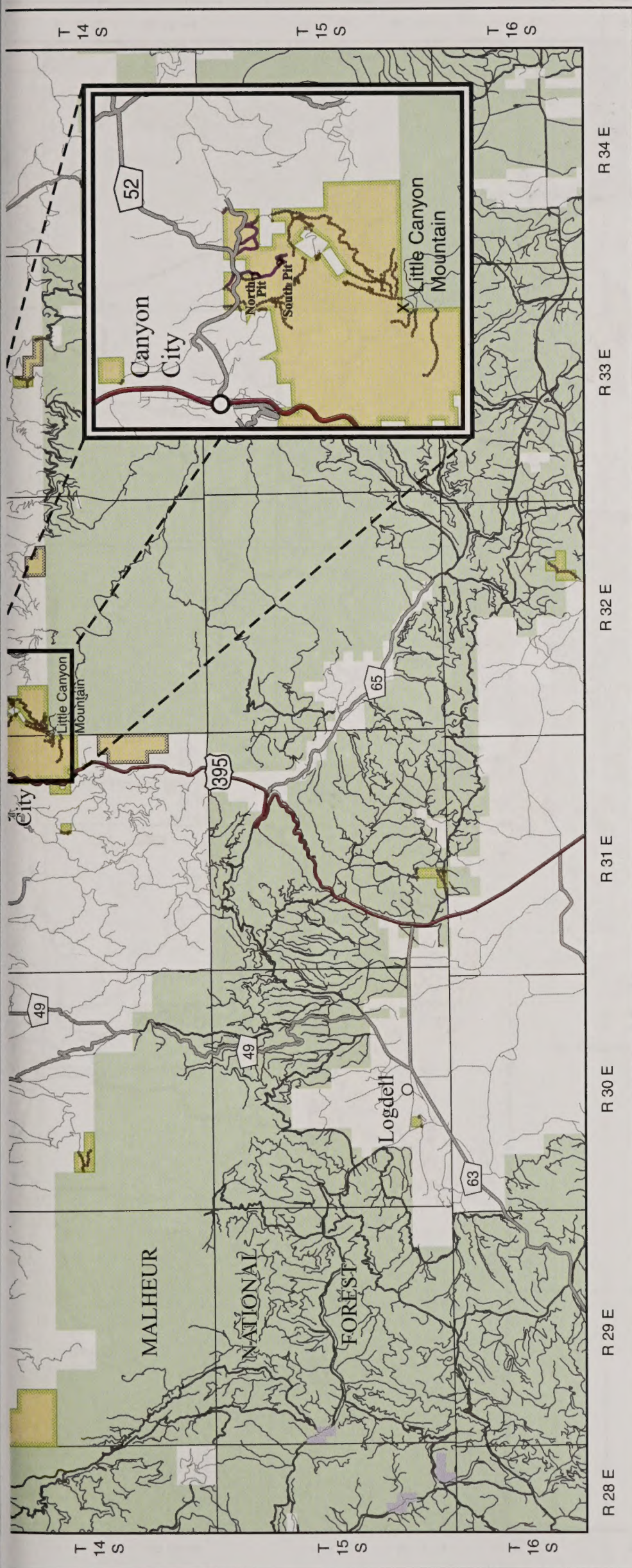
**Map 12D: Alternative 1 Travel Management and Off Highway Vehicle Designations - South Fork John Day**

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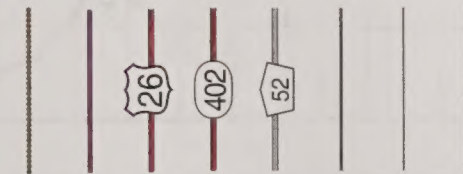






## LEGEND

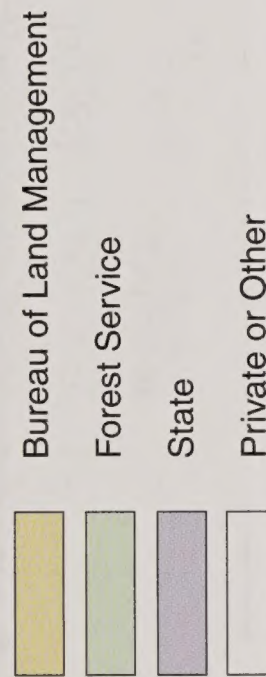
### Transportation



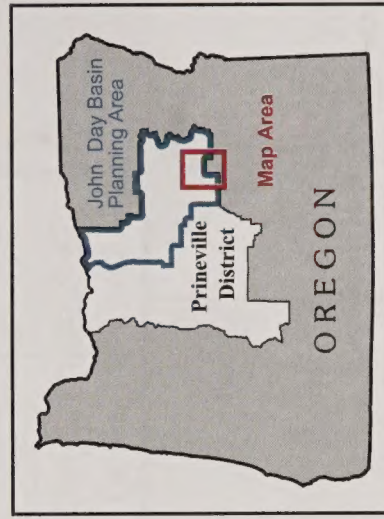
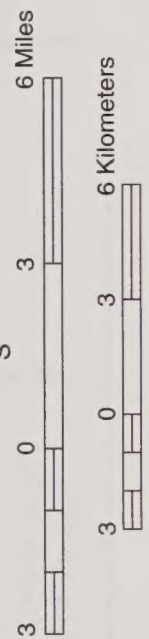
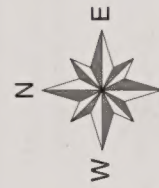
### Off Highway Vehicle Designation



### Administered Land



\* Note: Access to some areas listed as open may require landowner permission to cross private lands



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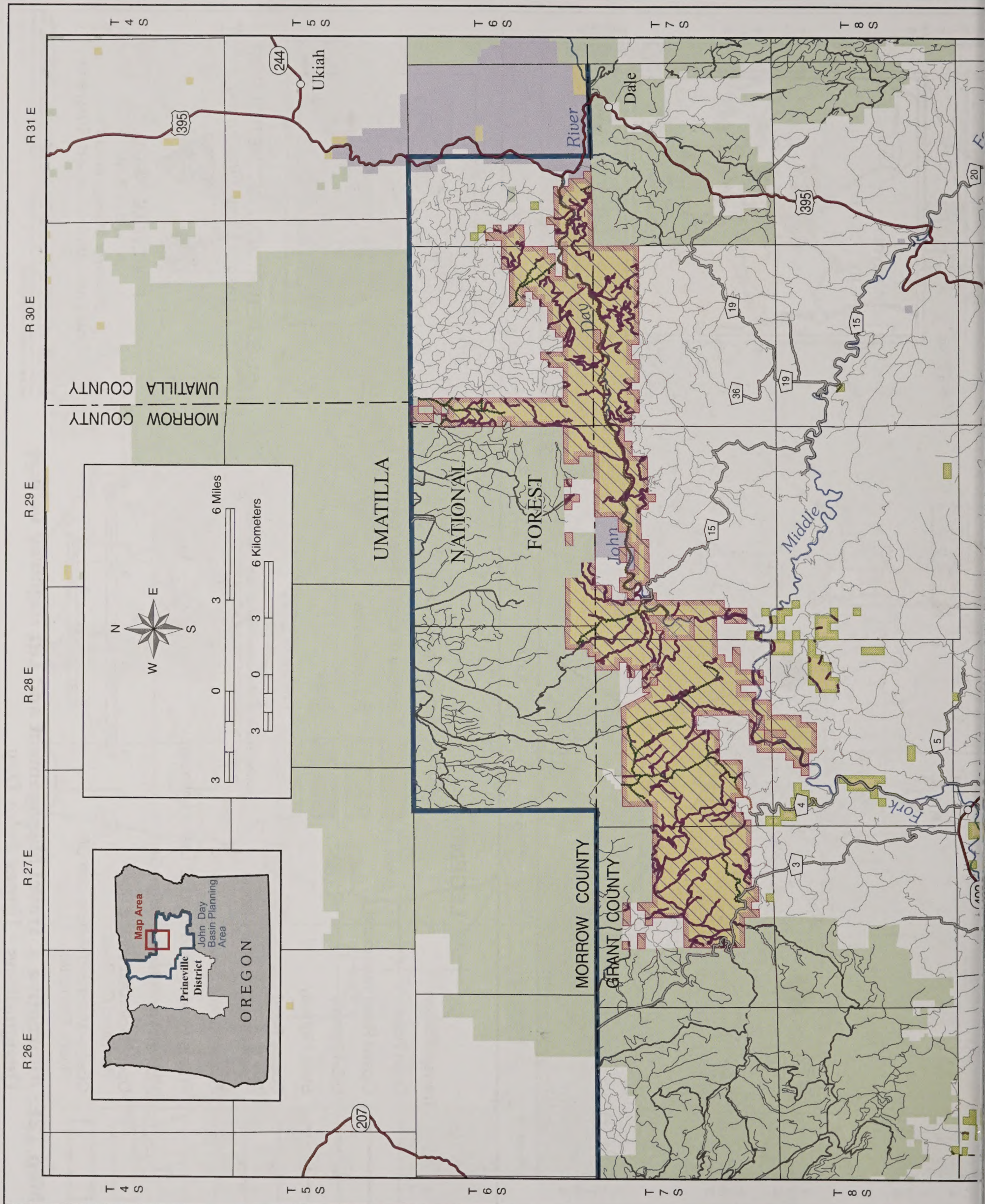


**PRINEVILLE DISTRICT**  
**John Day Basin**  
**Resource Management Plan**  
**Final Environmental Impact Statement**  
**2012**

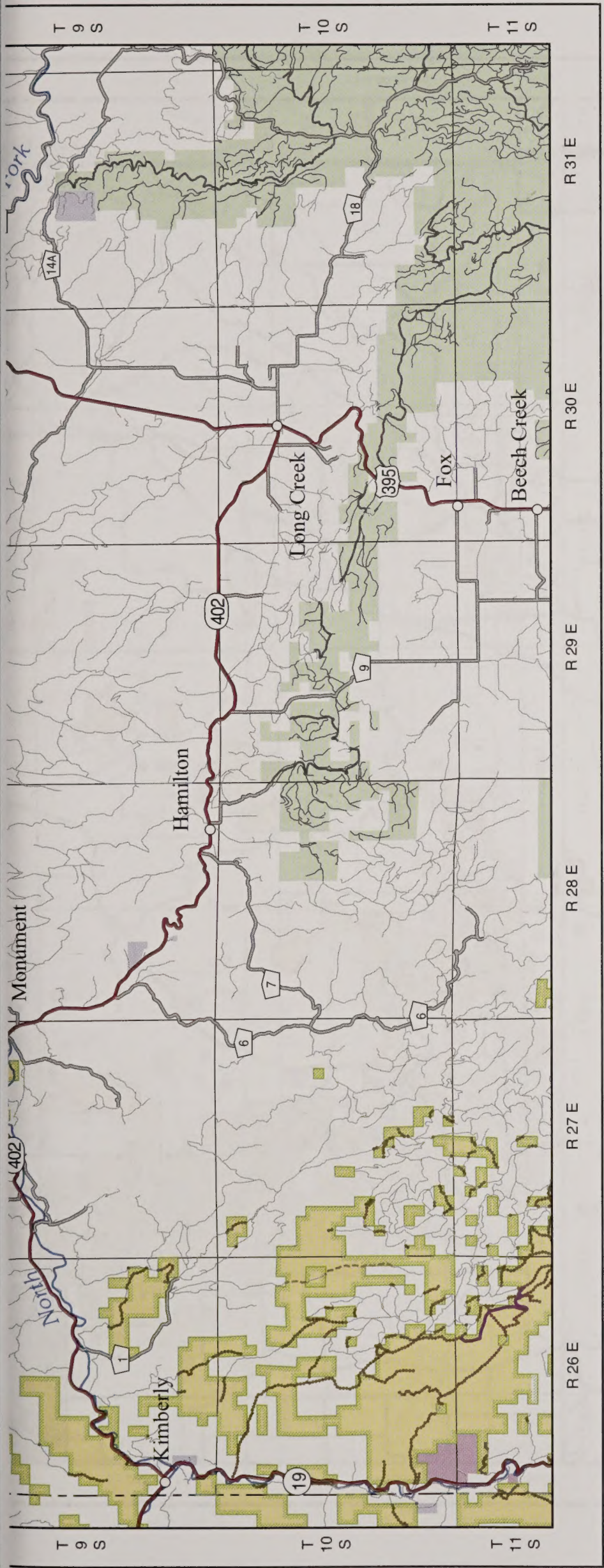
**Map 12E: Alternative 1 Travel Management and Off Highway Vehicle Designations - Upper John Day**

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LEGEND

Transportation

- Open Road
- Open Road Seasonally
- Public Trail, Non-Motorized
- County Road - Open Seasonally
- Closed Road
- U.S. Highway
- State Highway
- County Road
- Forest Service Primary Route
- Forest Service Secondary Route
- Private Road- Closed to public use or unknown

Off Highway Vehicle Designation

- Open- Motorized Vehicle Use Permitted Off Road
- Limited- Motorized Vehicle Use Limited to Designated Roads and Trails, Seasonally, or by Type of Vehicle
- Seasonal Motor Vehicle Restrictions

Planning Area Boundary

Administered Land

- Bureau of Land Management
- Forest Service
- John Day Fossil Beds National Monument
- State
- Private or Other

\* Note: Access to some areas listed as open may require landowner permission to cross private lands

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PRINEVILLE DISTRICT

John Day Basin

Resource Management Plan

Final Environmental Impact Statement

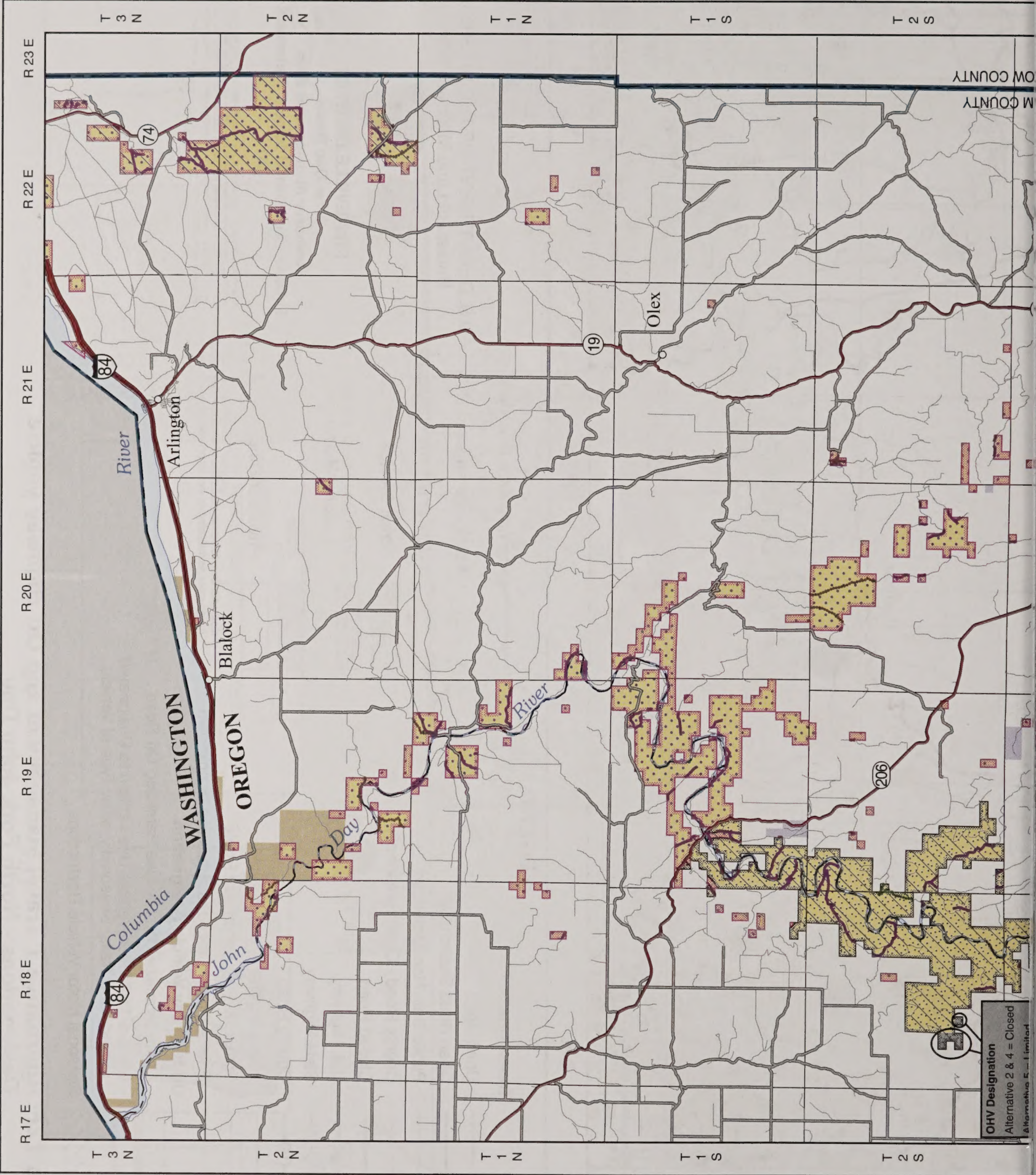
2012

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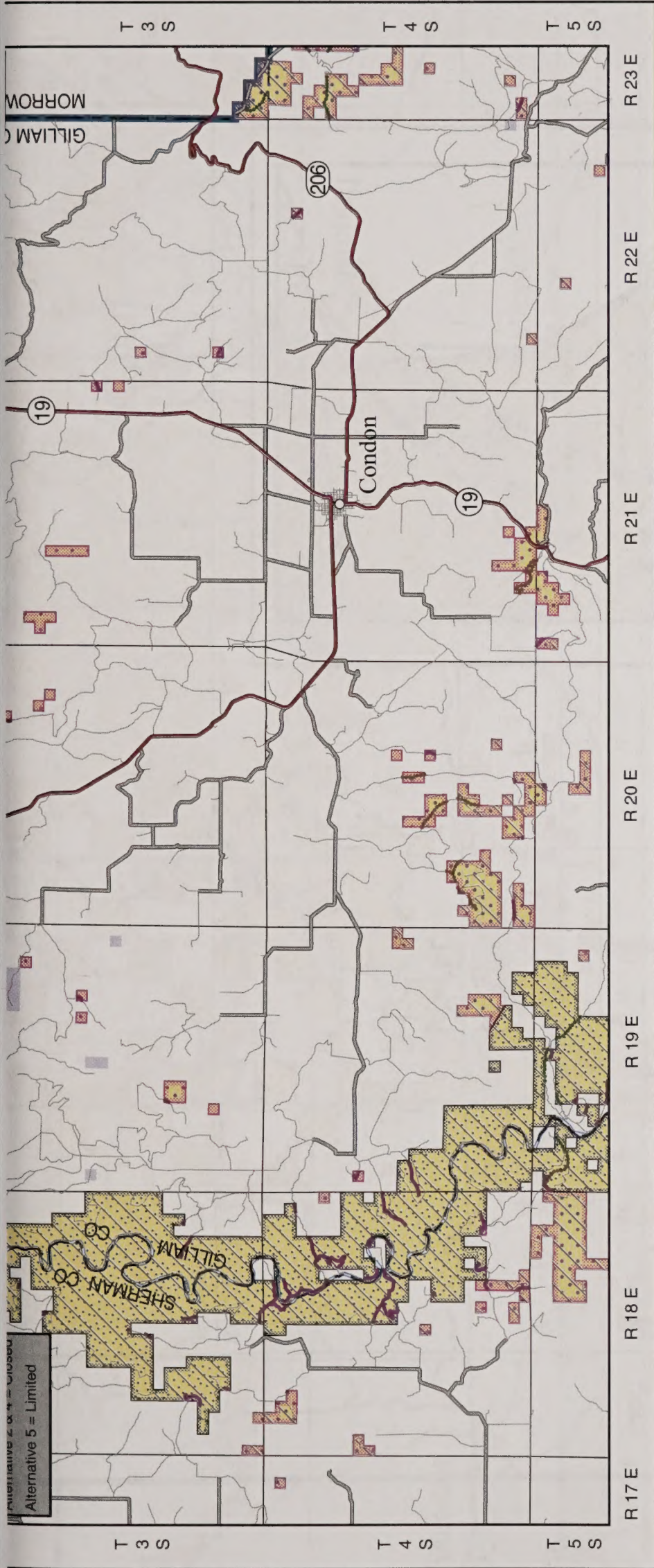
MO9-07-02 10-25-11

Map 12F: Alternative 1 Travel Management and Off Highway Vehicle Designations - North Fork John Day









### LEGEND

#### Interim Transportation Plan

- Open Road
- Open Road Seasonally
- Closed Road Year-round
- Interstate
- State Highway
- County Road
- Private Road, Closed to public use or unknown
- Off Highway Vehicle Designation**
- Closed- Motorized Vehicle Use Off Roads Prohibited
- Limited- Motorized Vehicle Use Limited to Designated Roads and Trails, Seasonally, or by Type of Vehicle
- Seasonal Motor Vehicle Restrictions

#### Road Density Prescription

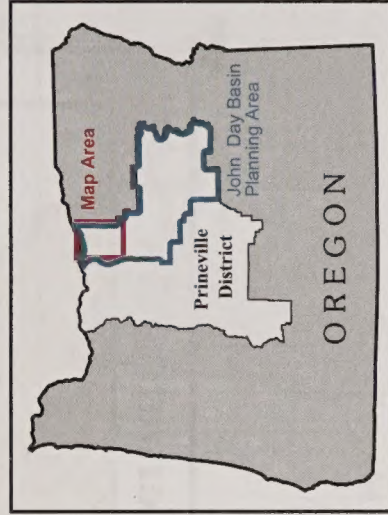
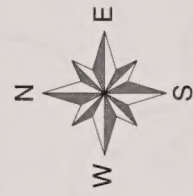
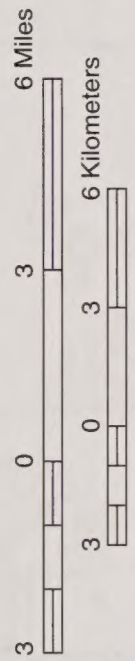
- Zero Miles per Square Mile
- Two Miles per Square Mile

#### Planning Area Boundary

#### Administered Land

- Bureau of Land Management
- Other Federal
- State
- Private or Other

\* Note: Access to some areas listed as open may require landowner permission to cross private lands



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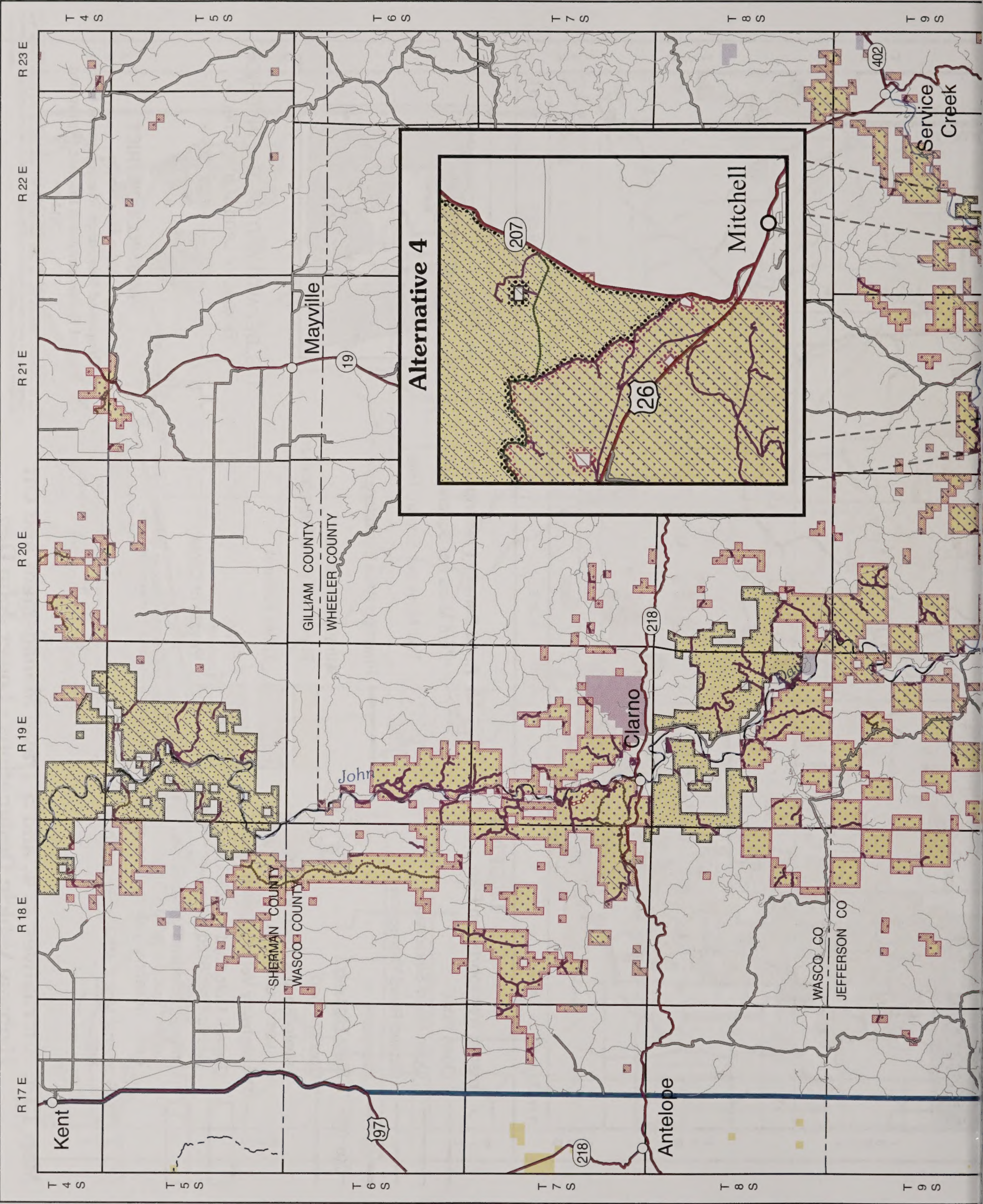


**PRINEVILLE DISTRICT**  
**John Day Basin**  
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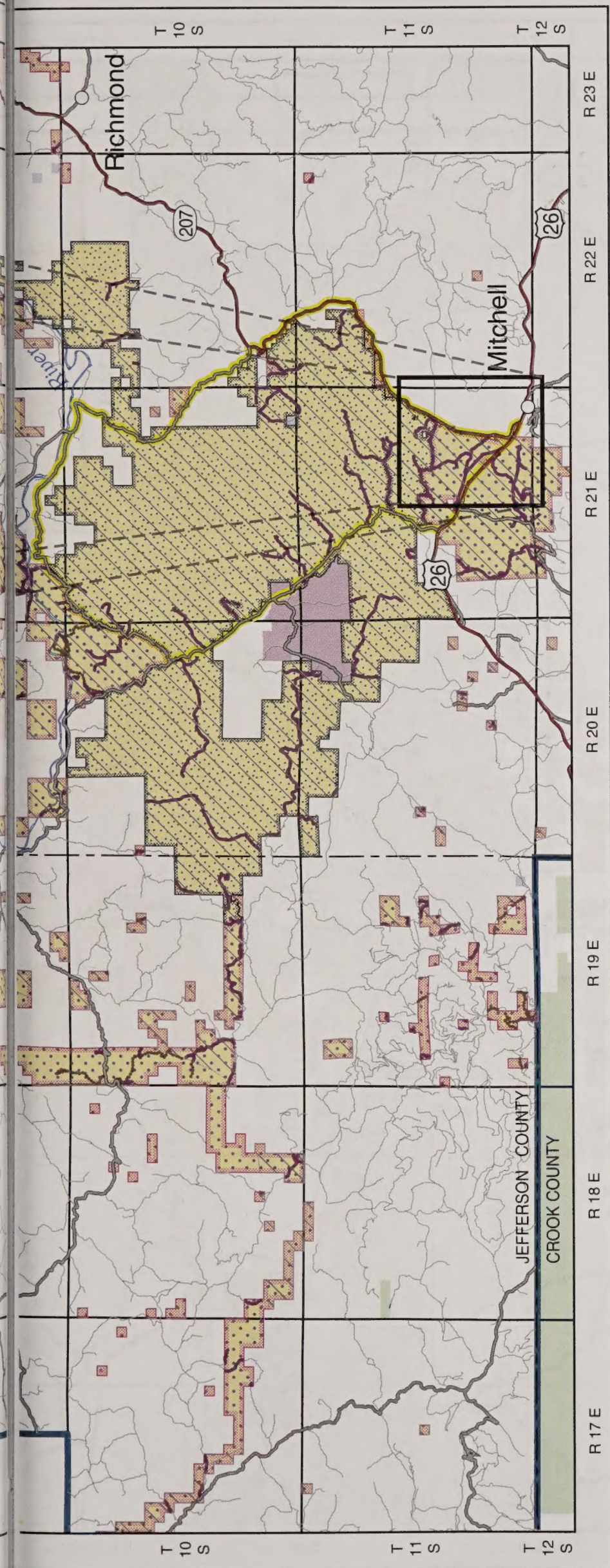
**Map 13A: Alternatives 2, 4, and 5 Travel Management and Off Highway Vehicle Designations - Lower John Day**

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## LEGEND

### Interim Transportation Designation

- Open Road
- Open Road - Needs Rehabilitation
- Open Road Seasonally
- Closed Road
- U.S. Highway
- State Highway
- County Road
- Forest Service Secondary Route
- Private Road- Closed to public use or unknown

### Off Highway Vehicle Designation

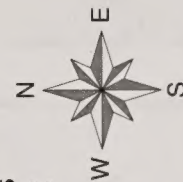
- Closed- Motorized Vehicle Use Off Roads Prohibited
- Limited- Motorized Vehicle Use Limited to Designated Roads and Trails, Seasonally, or by Type of Vehicle
- Seasonal Motor Vehicle Restrictions
- Sutton Mountain Back Country Byway

### Road Density Prescription

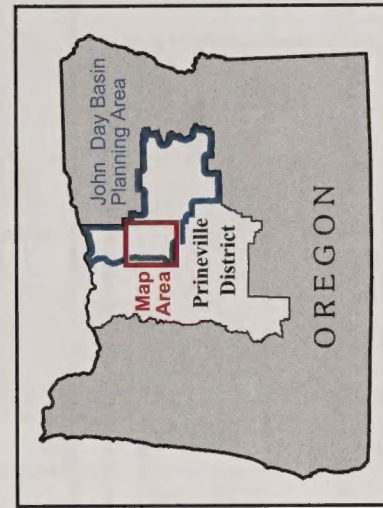
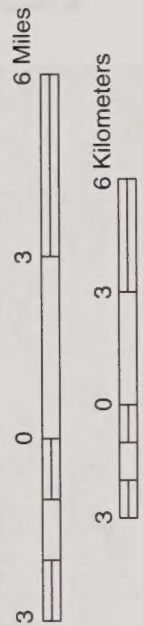
- Zero Miles per Square Mile
- Two Miles per Square Mile

### Administered Land

- Bureau of Land Management
- Forest Service
- John Day Fossil Beds National Monument
- State
- Private or Other



\* Note: Access to some areas listed as open may require landowner permission to cross private lands



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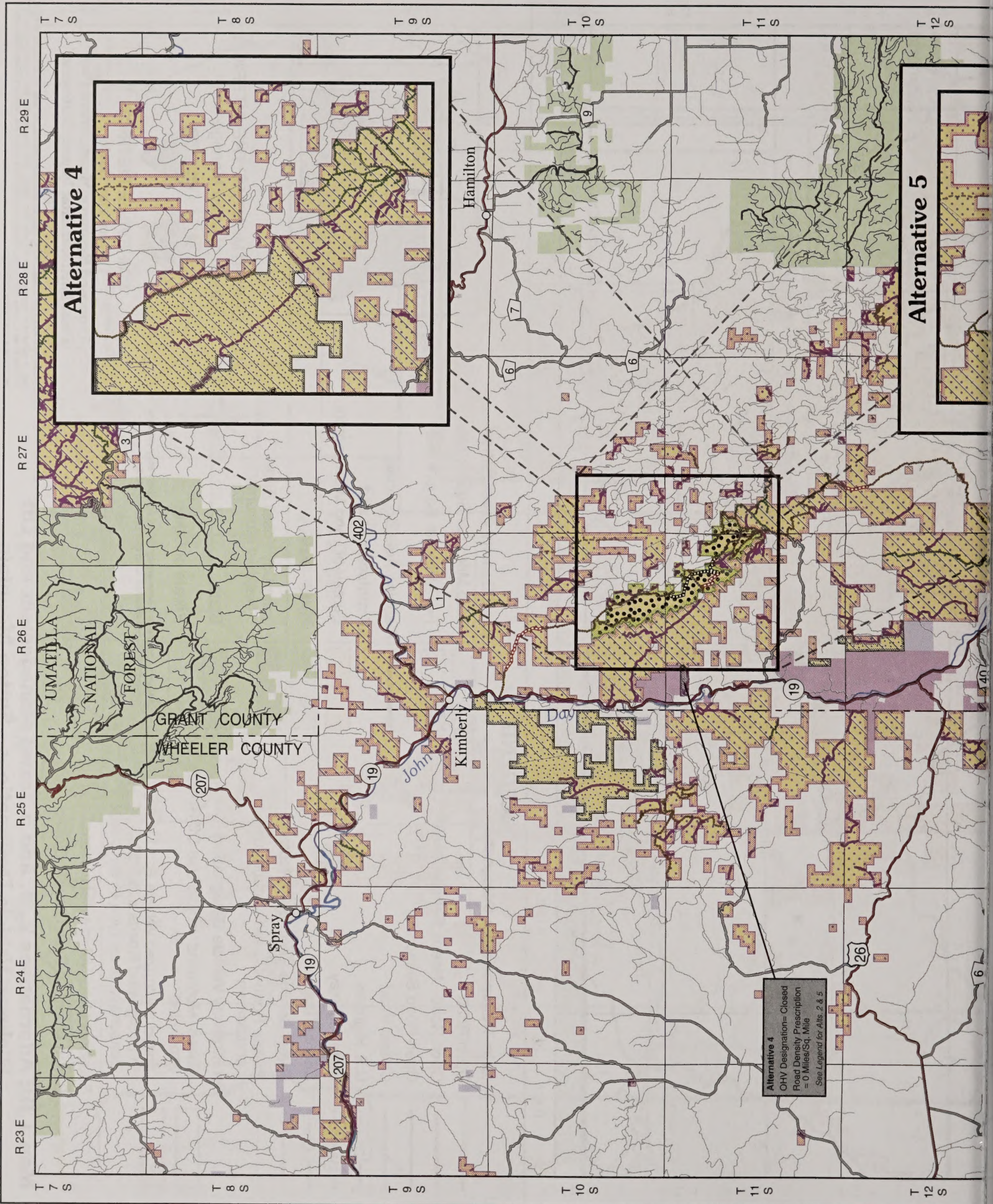
**PRINEVILLE DISTRICT**  
**John Day Basin**  
**Proposed Resource Management Plan**  
**Final Environmental Impact Statement**  
2012

**Map 13B: Alternatives 2, 4, and 5 Travel Management and Off Highway Vehicle Designations - Sutton Mountain**

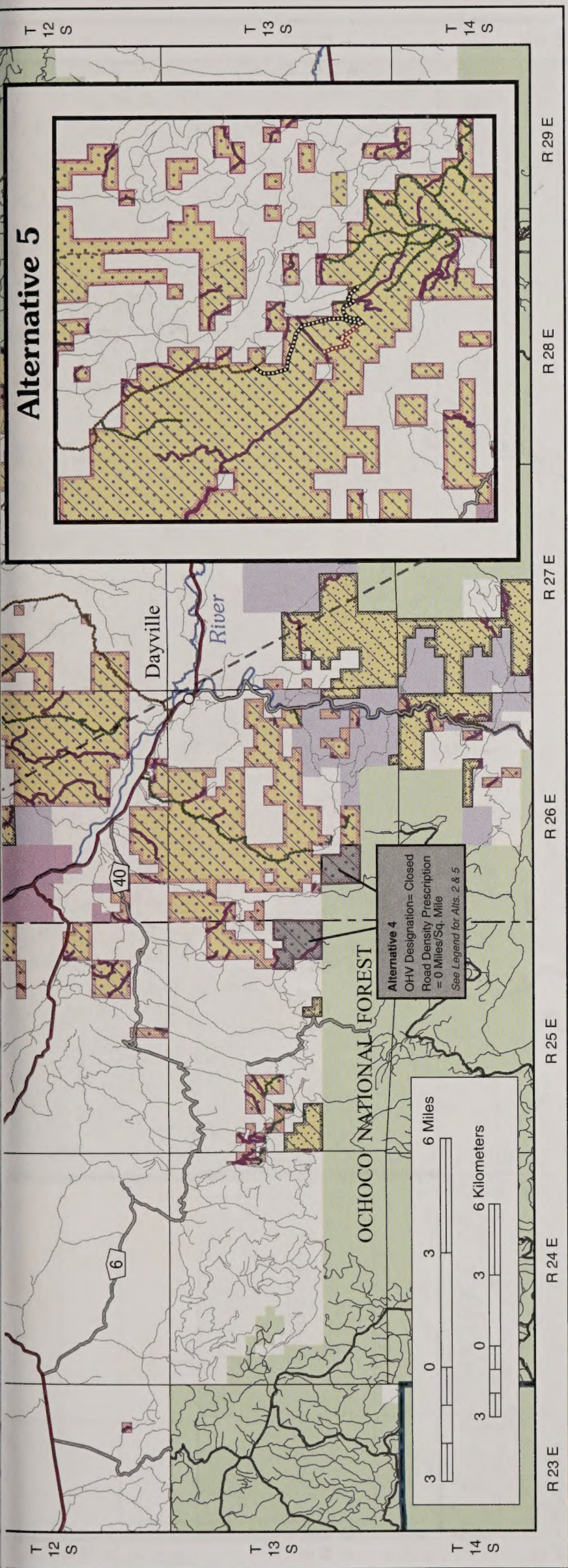
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LEGEND

Interim Transportation Designation

- Open Road
- Open Road - Needs Rehabilitation
- Open Road Seasonally
- Open Road Seasonally - Needs Rehabilitation
- Public Trail, Non-Motorized
- County Road - Open Seasonally
- Closed Road
- Proposed Road
- U.S. Highway
- State Highway
- County Road
- Forest Service Primary Route
- Forest Service Secondary Route
- Private Road- Closed to public use or unknown

Off Highway Vehicle Designation

- Open- Motorized Vehicle Use Permitted Off Road
- Closed- Motorized Vehicle Use Off Roads Prohibited
- Limited- Motorized Vehicle Use Limited to Designated Roads and Trails, Seasonally, or by Type of Vehicle
- Seasonal Motor Vehicle Restrictions

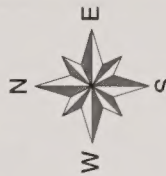
Road Density Prescription

- Zero Miles per Square Mile
- Two Miles per Square Mile
- No Limit

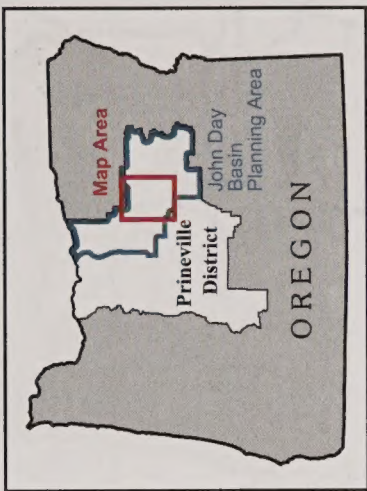
Planning Area Boundary

Administered Land

- Bureau of Land Management
- Forest Service
- John Day Fossil Beds National Monument
- State
- Private or Other



\* Note: Access to some areas listed as open may require landowner permission to cross private lands



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PRINEVILLE DISTRICT

John Day Basin

Proposed Resource Management Plan  
Final Environmental Impact Statement

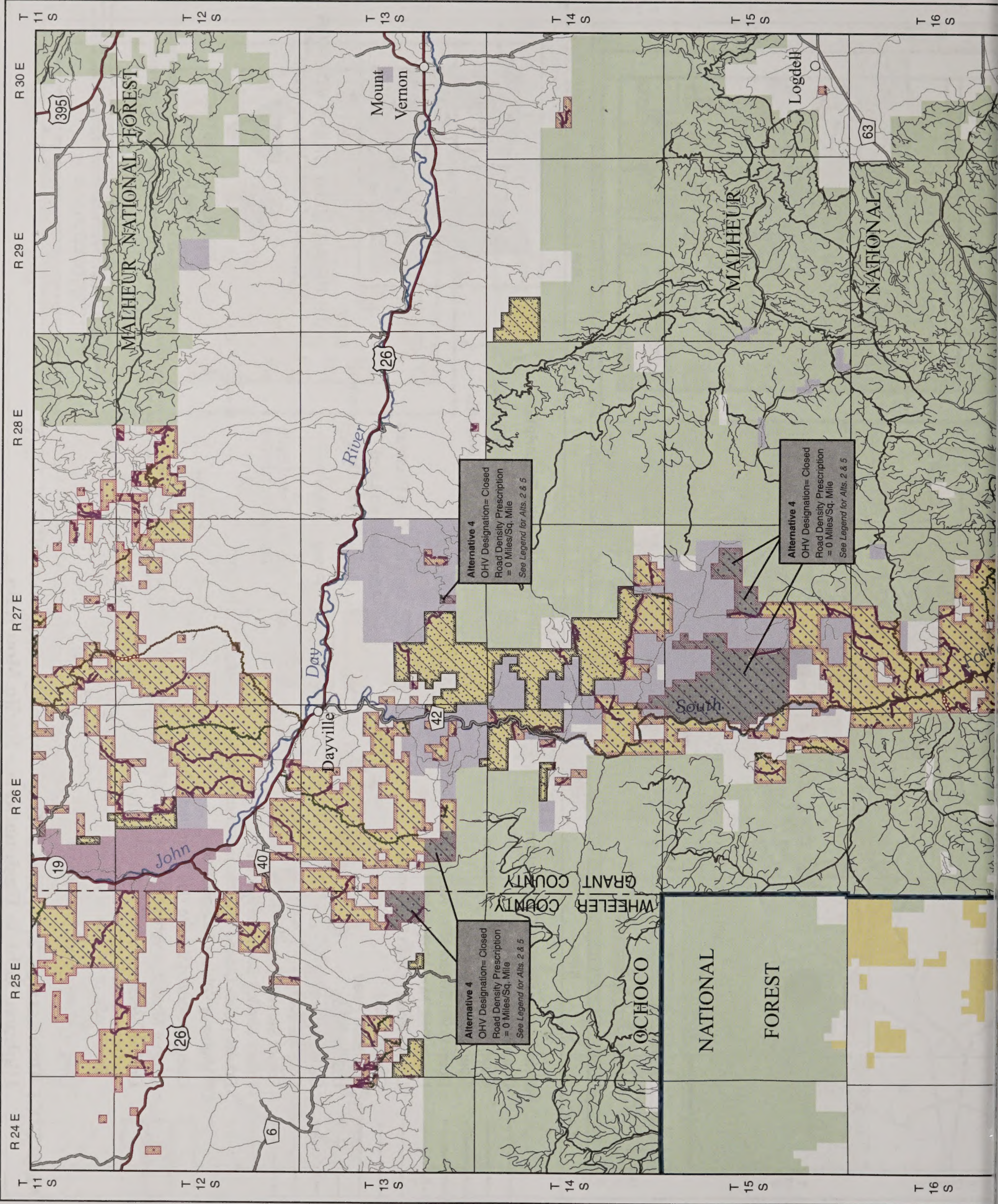
2012

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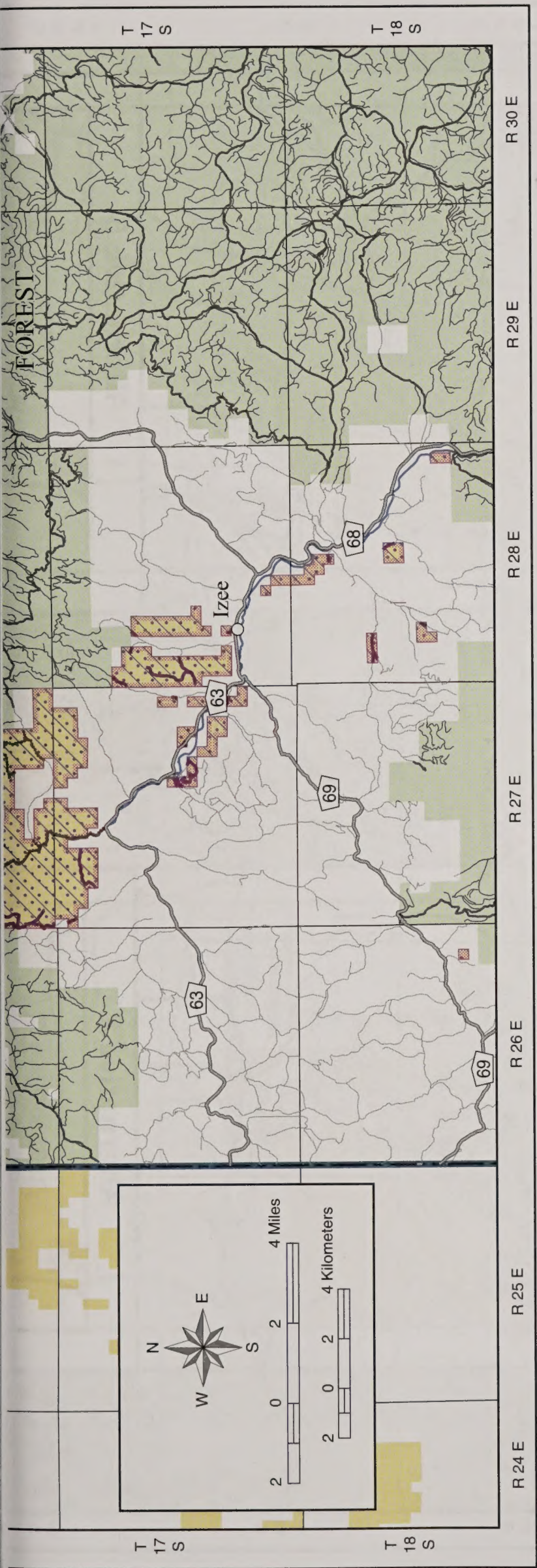
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Map 13C: Alternatives 2, 4, and 5 Travel Management and Off Highway Vehicle Designations - Rudio Mountain









## LEGEND

### Interim Transportation Designation

- Open Road
- Open Road - Needs Rehabilitation
- Open Road Seasonally
- Closed Road
- Proposed Road
- U.S. Highway
- State Highway
- County Road
- Forest Service Primary Route
- Forest Service Secondary Route
- Private Road- Closed to public use or unknown

### Off Highway Vehicle Designation

- Closed- Motorized Vehicle Use Off Roads Prohibited
- Limited- Motorized Vehicle Use Limited to Designated Roads and Trails, Seasonally, or by Type of Vehicle
- Seasonal Motor Vehicle Restrictions

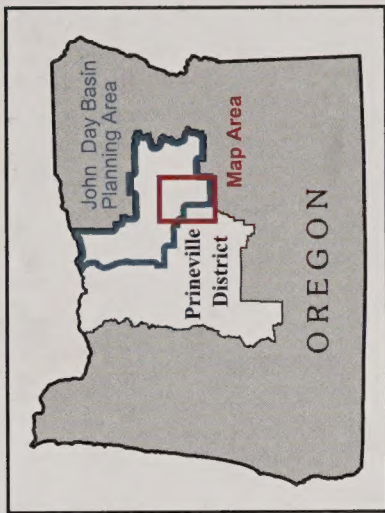
### Road Density Prescription

- Zero Miles per Square Mile
- Two Miles per Square Mile
- Planning Area Boundary

### Administered Land

- Bureau of Land Management
- Forest Service
- John Day Fossil Beds National Monument
- State
- Private or Other

\* Note: Access to some areas listed as open may require landowner permission to cross private lands



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PRINEVILLE DISTRICT

John Day Basin

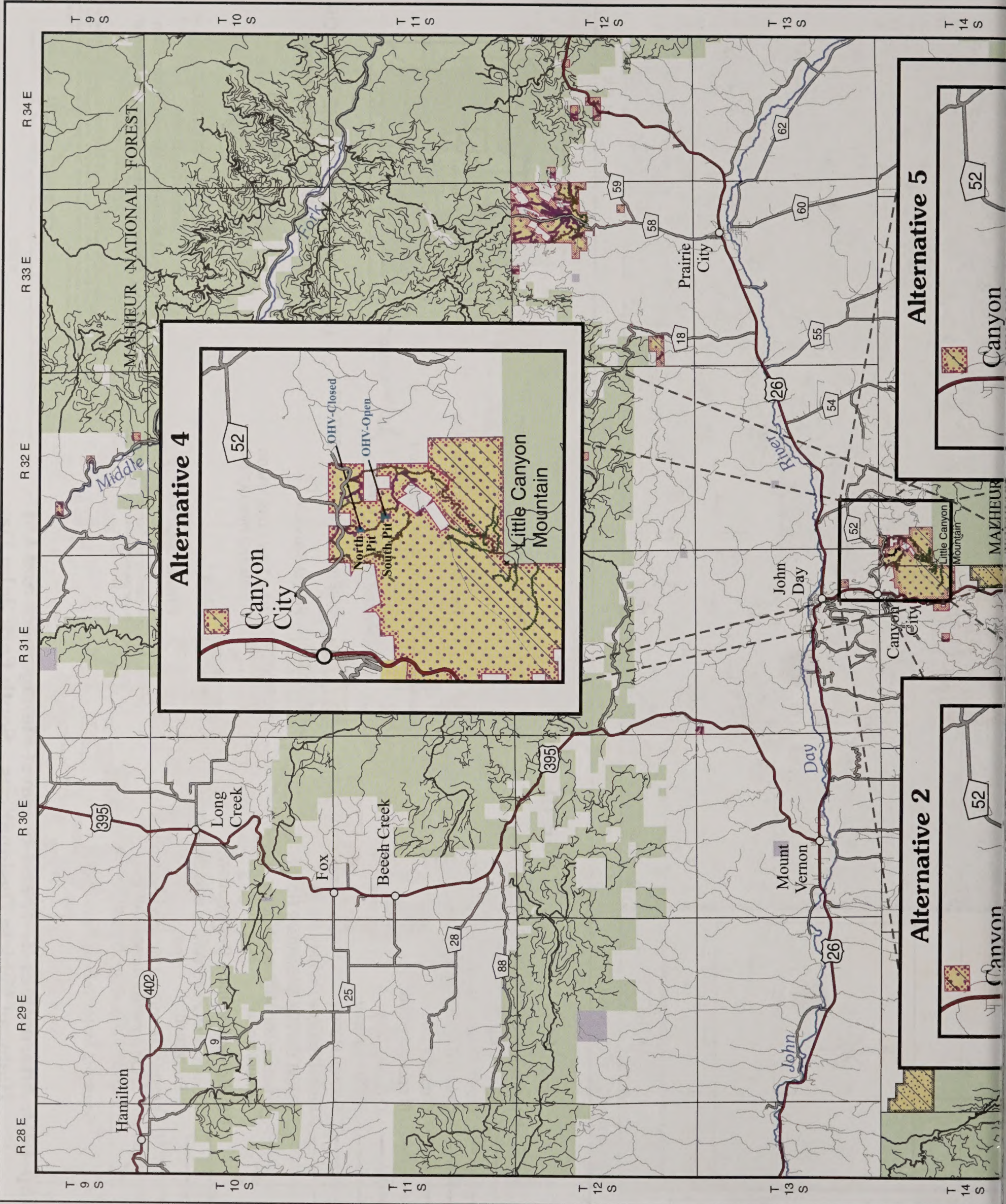
Proposed Resource Management Plan  
Final Environmental Impact Statement

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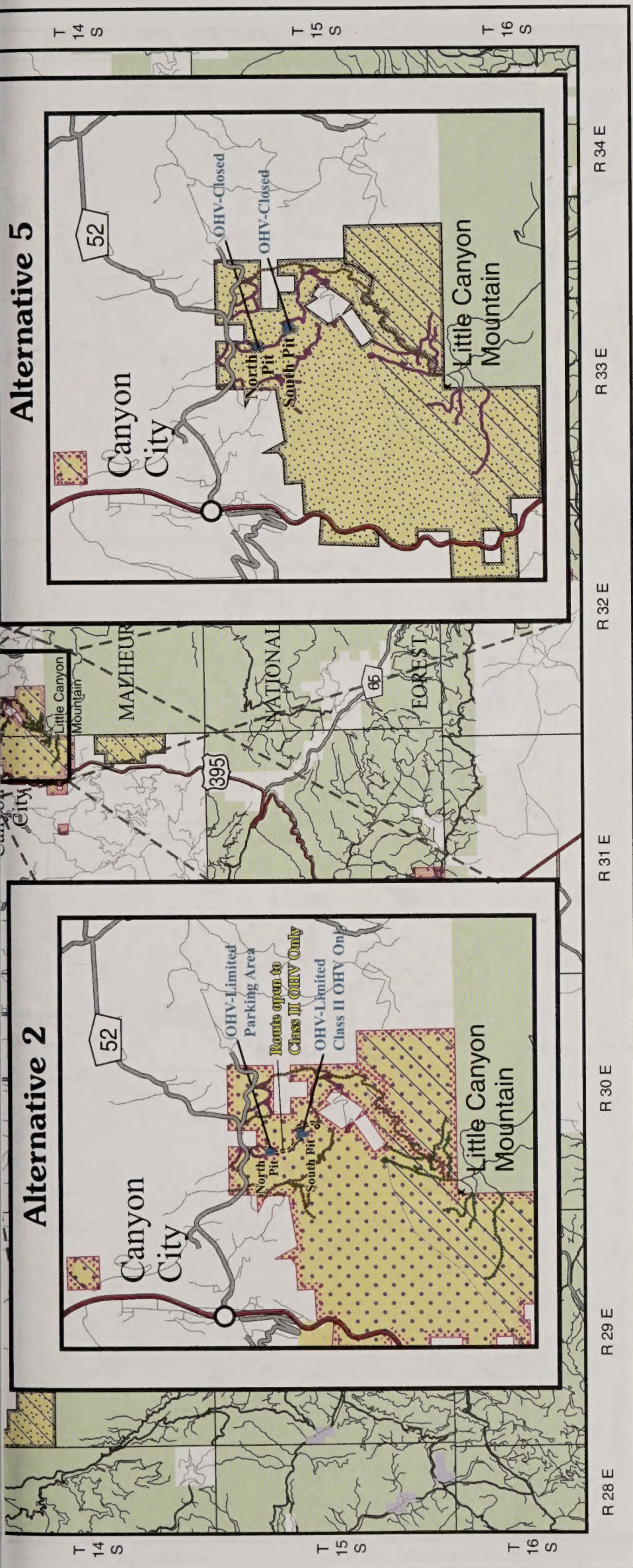
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Map 13D: Alternatives 2, 4, and 5 Travel Management and Off Highway Vehicle Designations - South Fork John Day









## LEGEND

### Interim Transportation Designation

- Open Road
- Open Road Seasonally
- Closed Road
- U.S. Highway
- State Highway
- County Road
- Forest Service Primary Route
- Forest Service Secondary Route
- Private Road- Closed to public use or unknown

### Off Highway Vehicle Designation

- Closed- Motorized Vehicle Use Off Roads Prohibited
- Limited- Motorized Vehicle Use Limited to Designated Roads and Trails, Seasonally, or by Type of Vehicle
- Seasonal Motor Vehicle Restrictions

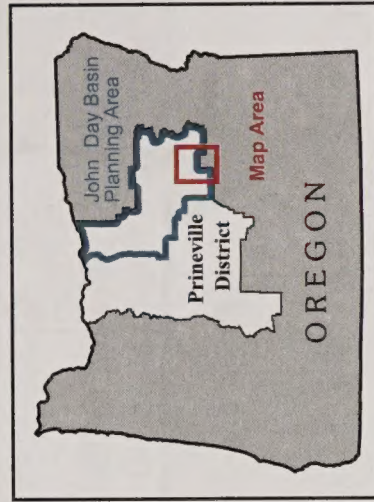
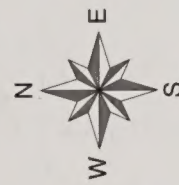
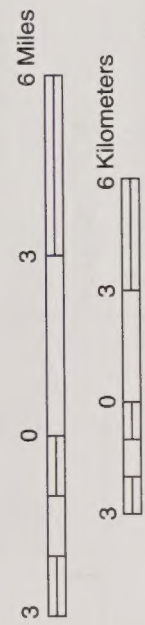
### Road Density Prescription

- Zero Miles per Square Mile
- Two Miles per Square Mile

### Administered Land

- Bureau of Land Management
- Forest Service
- State
- Private or Other

\* Note: Access to some areas listed as open may require landowner permission to cross private lands



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## PRINEVILLE DISTRICT

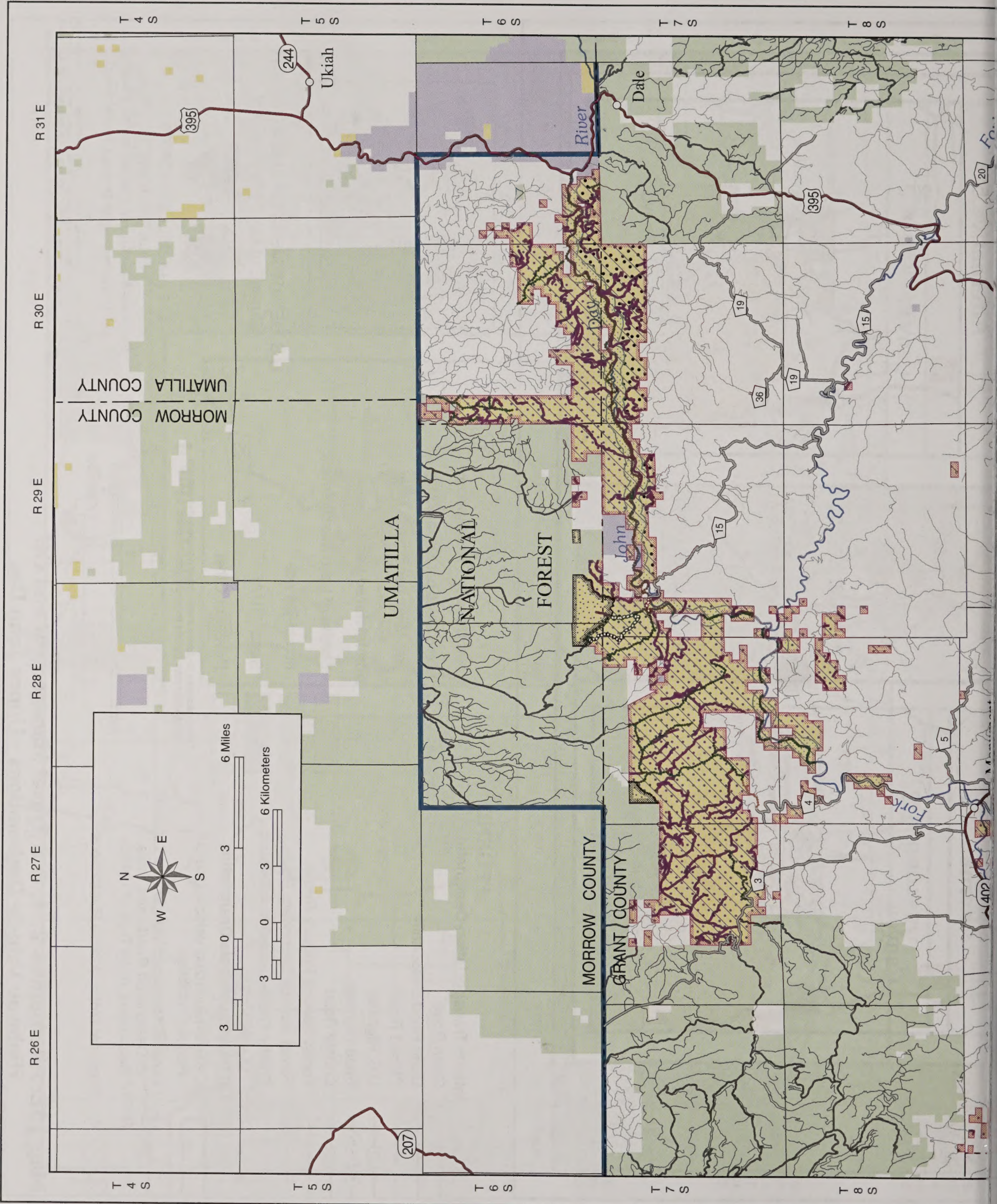
John Day Basin  
Proposed Resource Management Plan  
Final Environmental Impact Statement

2012

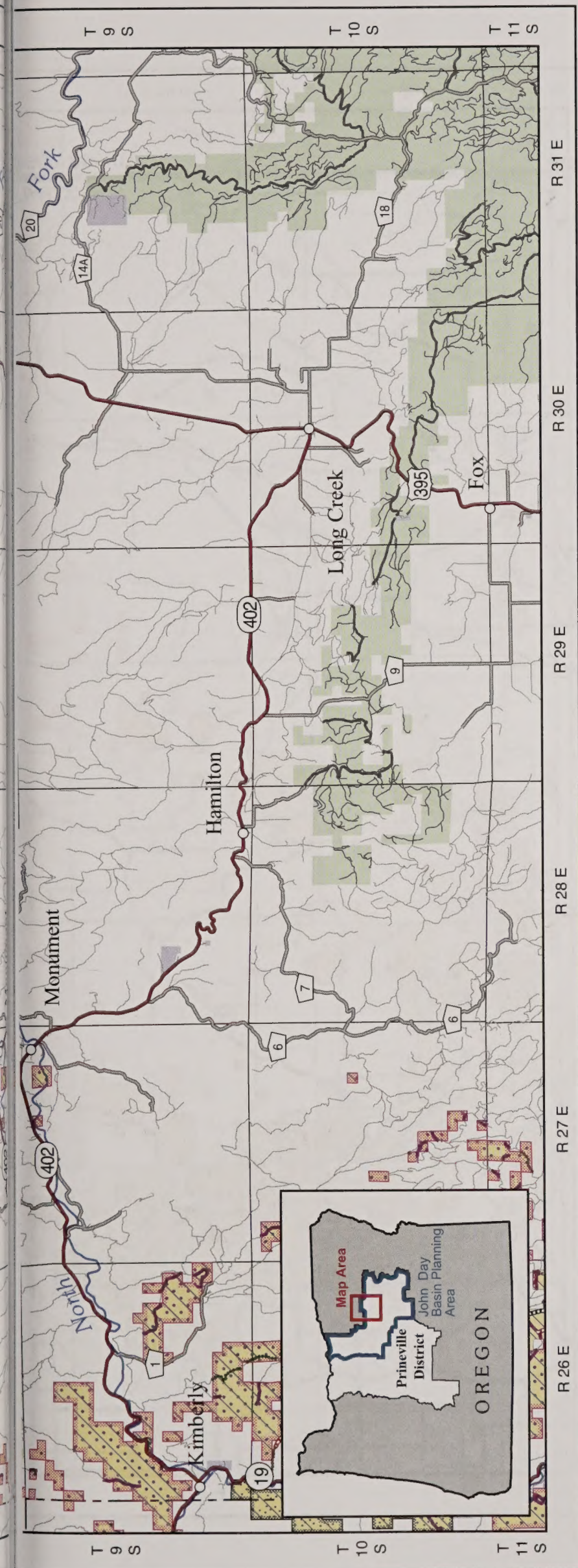
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Map 13E: Alternatives 2, 4, & 5 Travel Management and Off Highway Vehicle Designations - Upper John Day









## LEGEND

### Interim Transportation Designation

- Open Road
- Open Road - Needs Rehabilitation
- Open Road Seasonally
- Open Road Seasonally - Needs Rehabilitation
- County Road - Open Seasonally
- Closed Road
- Proposed Road
- U.S. Highway
- State Highway
- County Road
- Forest Service Primary Route
- Forest Service Secondary Route
- Private Road- Closed to public use or unknown
- Off Highway Vehicle Designation**
  - Closed- Motorized Vehicle Use Off Roads Prohibited
  - Limited- Motorized Vehicle Use Limited to Designated Roads and Trails, Seasonally, or by Type of Vehicle
  - Seasonal Motor Vehicle Restrictions

### Road Density Prescription

- Zero Miles per Square Mile
- One and One Tenth per Square Mile
- One and One Half Mile per Square Mile
- Two Miles per Square Mile

### Administered Land

- Bureau of Land Management
- Forest Service
- John Day Fossil Beds National Monument
- State
- Private or Other

### Planning Area Boundary

- Bureau of Land Management

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## PRINEVILLE DISTRICT

John Day Basin

## Proposed Resource Management Plan Final Environmental Impact Statement 2012

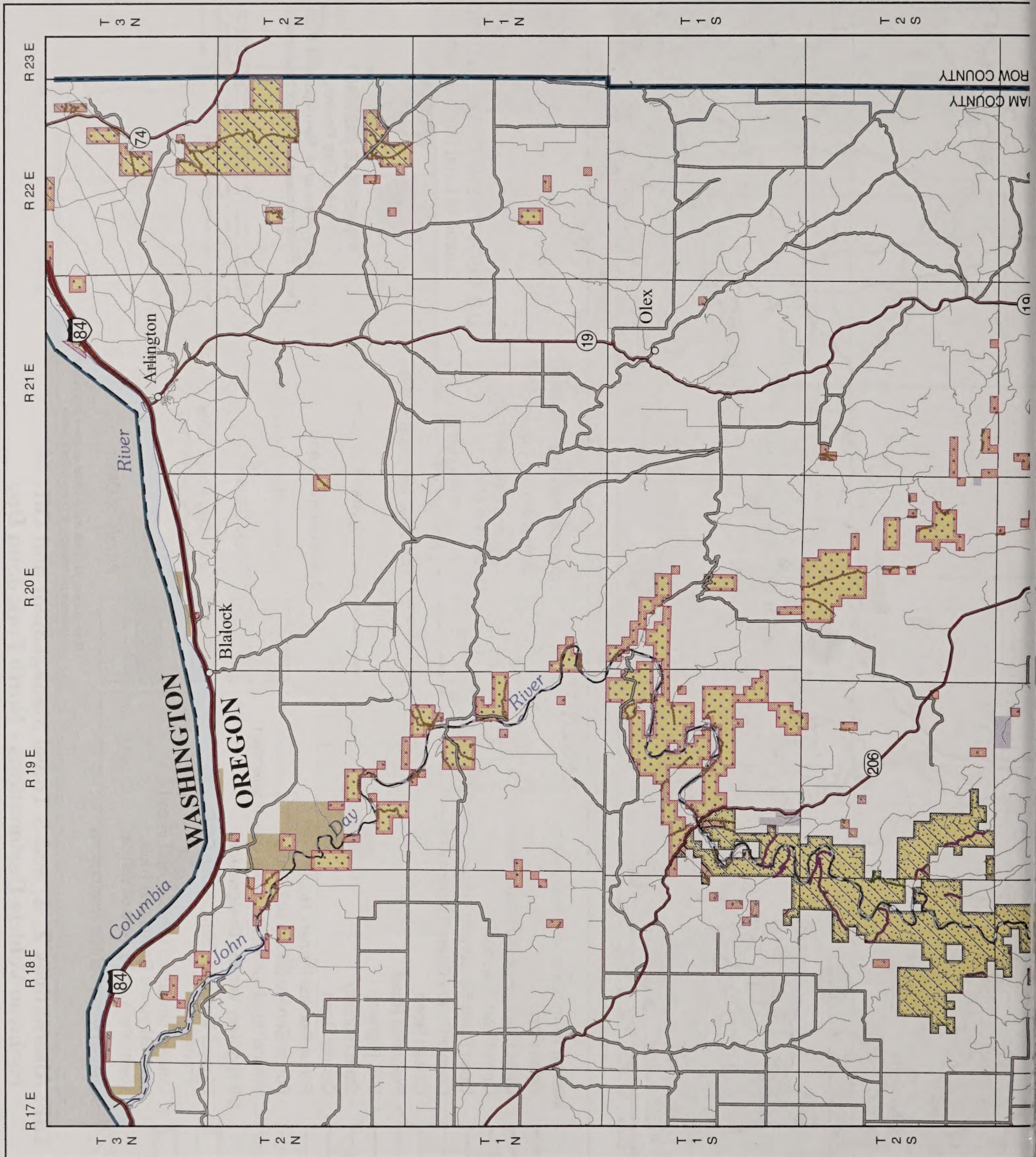
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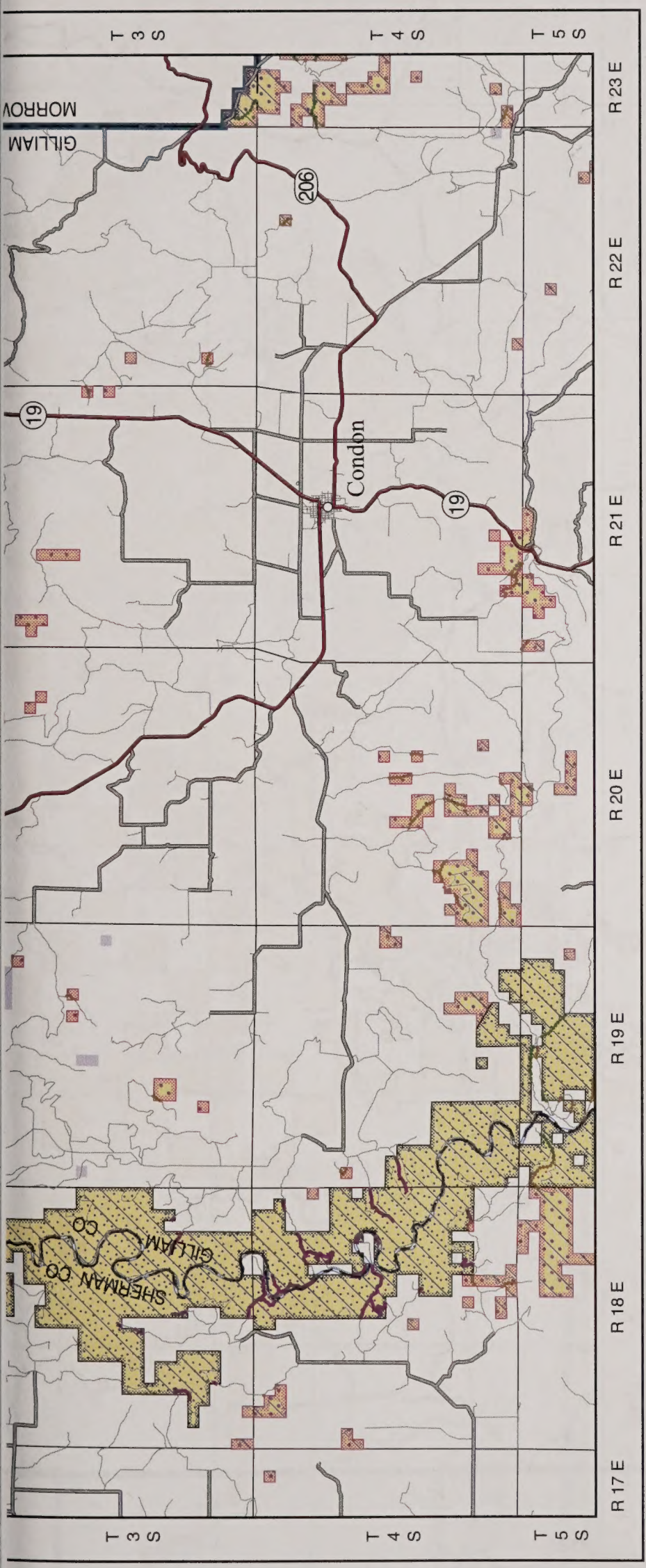
\* Note: Access to some areas listed as open may require landowner permission to cross private lands

**Map 13F: Alternatives 2, 4, and 5 Travel Management and Off Highway Vehicle Designations - North Fork John Day**









**LEGEND**

**Interim Transportation Designation**

- Open Road
- Open Road Seasonally
- Closed Road
- Interstate
- State Highway
- County Road
- Private Road, Closed to public use or unknown

**Off Highway Vehicle Designation**

- Closed- Motorized Vehicle Use Off Roads Prohibited
- Limited- Motorized Vehicle Use Limited to Designated Roads and Trails, Seasonally, or by Type of Vehicle
- Seasonal Motor Vehicle Restrictions

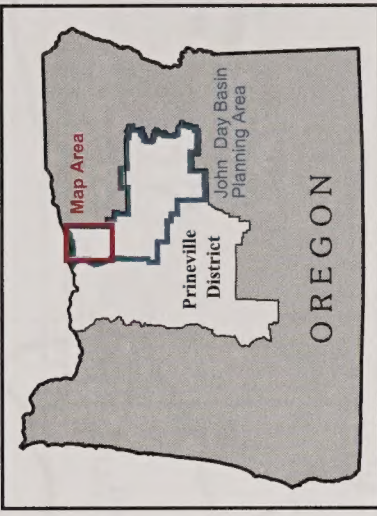
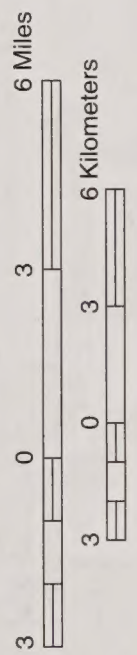
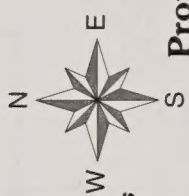
**Road Density Prescription**

- Zero Miles per Square Mile
- Two Miles per Square Mile
- Planning Area Boundary

**Administered Land**

- Bureau of Land Management
- Other Federal
- State
- Private or Other

\* Note: Access to some areas listed as open may require landowner permission to cross private lands



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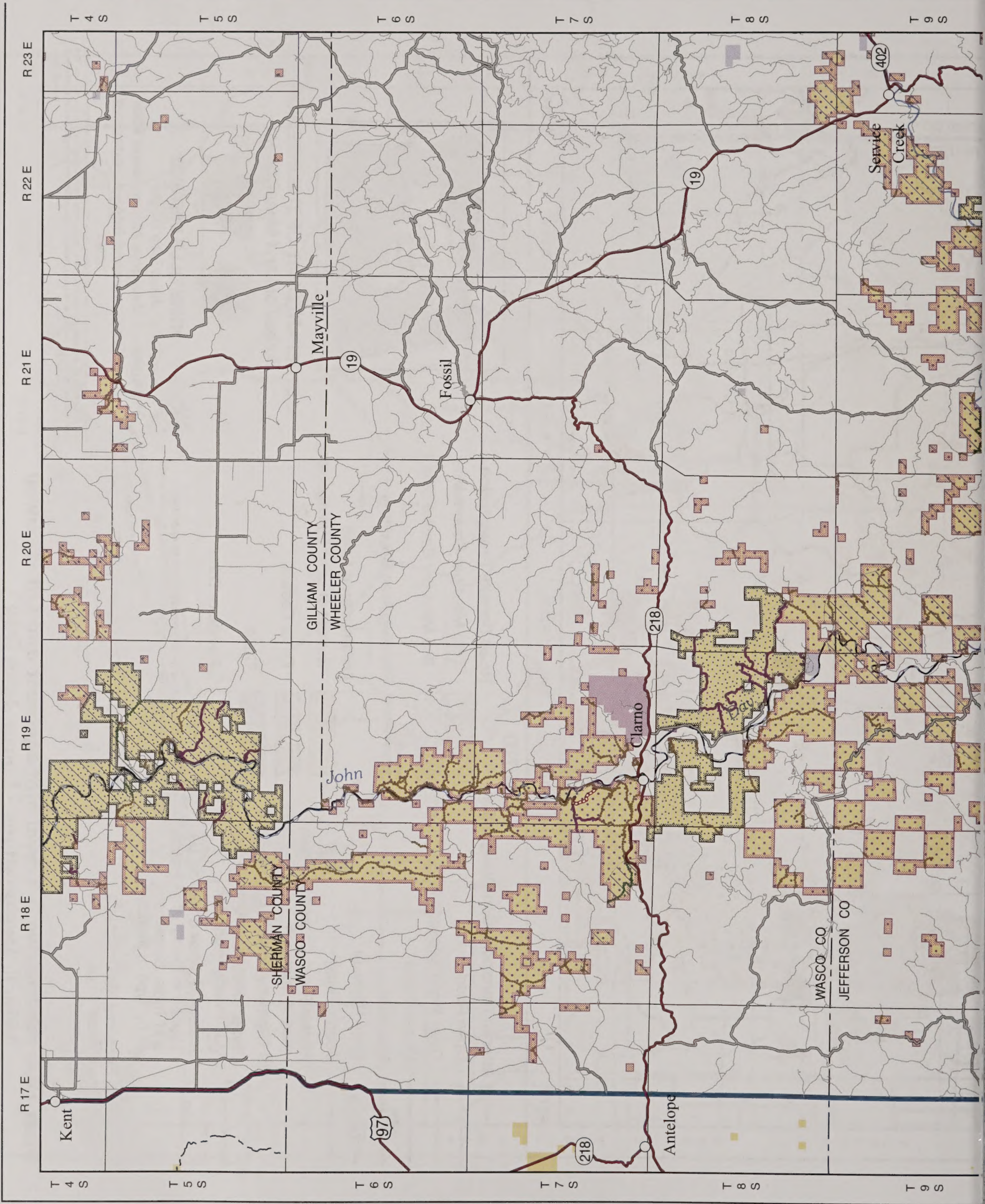
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**John Day Basin**  
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**2012**

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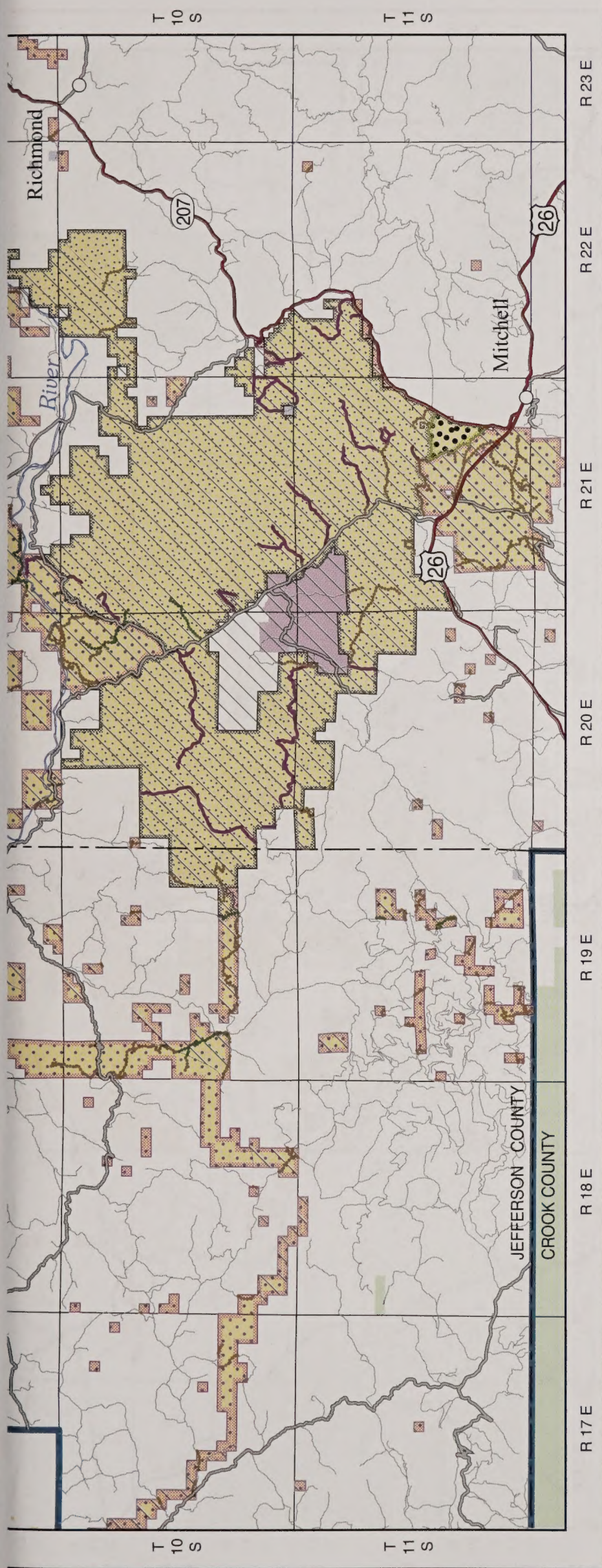
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**Map 14A: Alternative 3 Travel Management and Off Highway Vehicle Designations - Lower John Day**









## LEGEND

### Interim Transportation Designation

- Open Road
- Open Road - Needs Rehabilitation
- Open Road Seasonally
- Closed Road
- U.S. Highway
- State Highway
- County Road
- Forest Service Secondary Route
- Private Road- Closed to public use or unknown

### Off Highway Vehicle Designation

- Open- Motorized Vehicle Use Permitted Off Road
- Closed- Motorized Vehicle Use Off Roads Prohibited
- Limited- Motorized Vehicle Use Limited to Designated Roads and Trails, Seasonally, or by Type of Vehicle
- Seasonal Motor Vehicle Restrictions

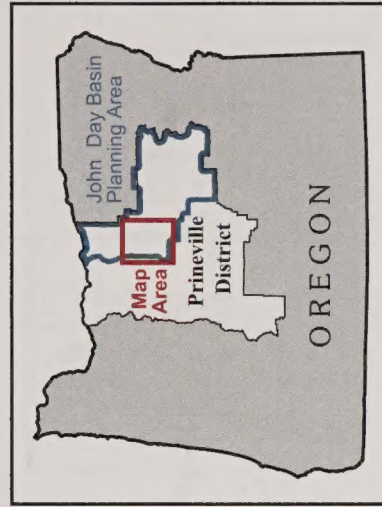
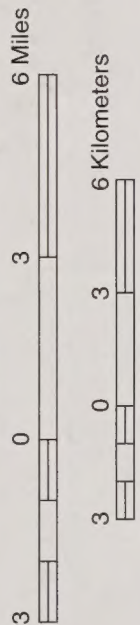
### Road Density Prescription

- Zero Miles per Square Mile
- Two Miles per Square Mile
- No Limit

### Administered Land

- Bureau of Land Management
- Forest Service
- John Day Fossil Beds National Monument
- State
- Private or Other

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John Day Basin

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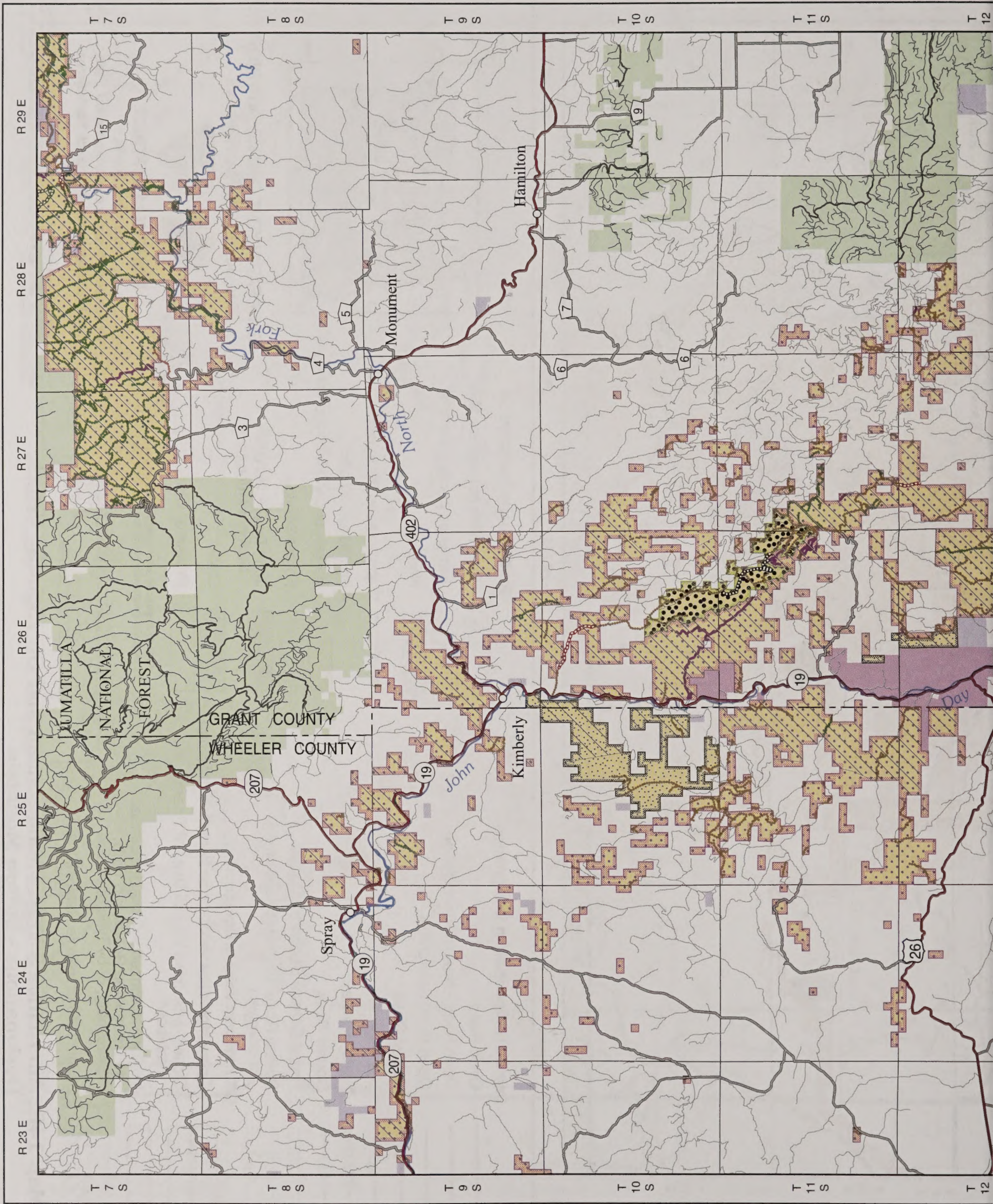
2012

**Map 14B: Alternative 3 Travel Management and Off Highway Vehicle Designations - Sutton Mountain**

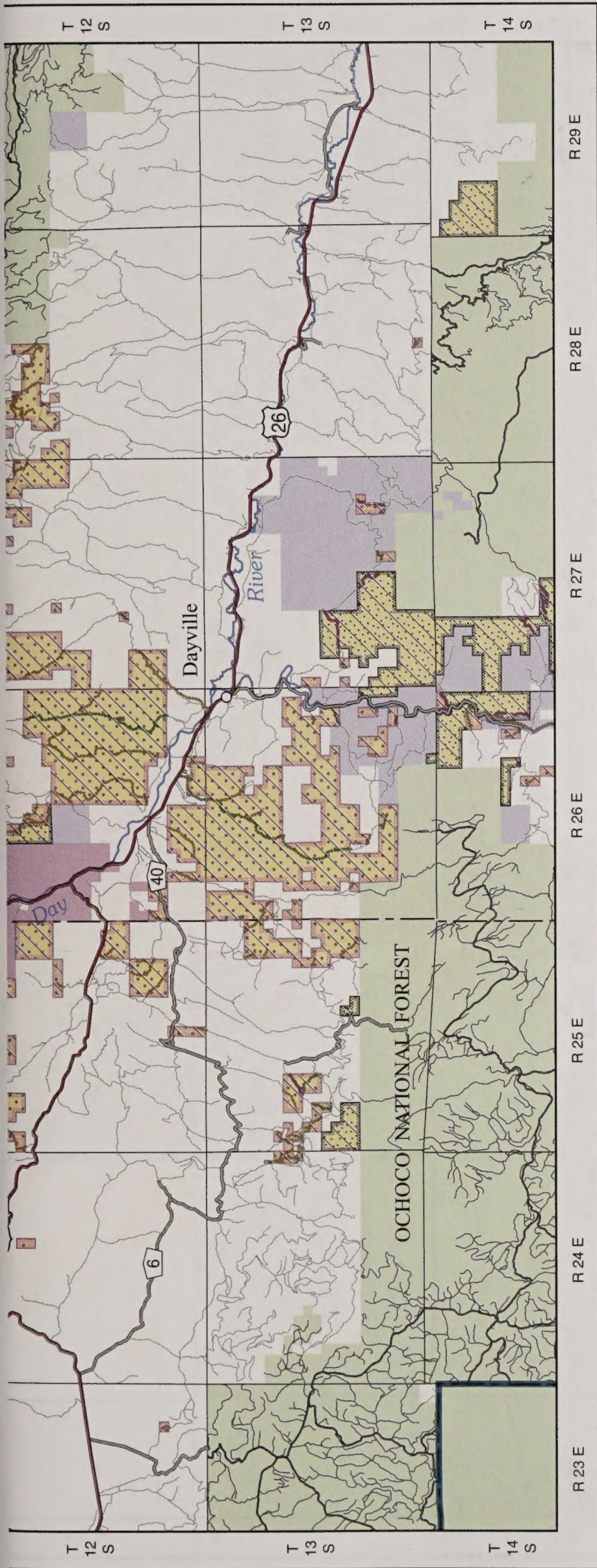
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## LEGEND

### Interim Transportation Designation

- Open Road
- Open Road - Needs Rehabilitation
- Open Road Seasonally
- Open Road Seasonally - Needs Rehabilitation
- Public Trail, Non-Motorized
- County Road - Open Seasonally
- Closed Road
- Proposed Road
- U.S. Highway
- State Highway
- County Road
- Forest Service Primary Route
- Forest Service Secondary Route
- Private Road- Closed to public use or unknown

### Off Highway Vehicle Designation

- Open- Motorized Vehicle Use Permitted Off Road
- Closed- Motorized Vehicle Use Off Roads Prohibited
- Limited- Motorized Vehicle Use Limited to Designated Roads and Trails, Seasonally, or by Type of Vehicle
- Seasonal Motor Vehicle Restrictions

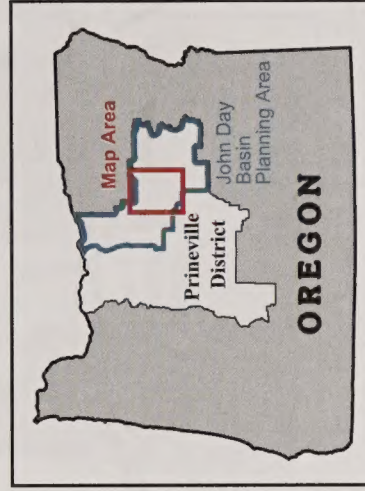
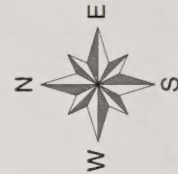
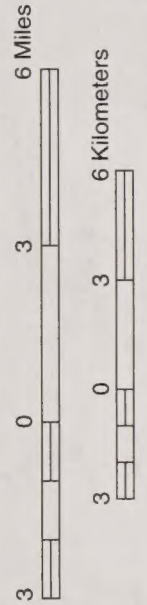
### Road Density Prescription

- Zero Miles per Square Mile
- Two Miles per Square Mile
- No Limit

### Administered Land

- Bureau of Land Management
- Forest Service
- John Day Fossil Beds National Monument
- State
- Private or Other

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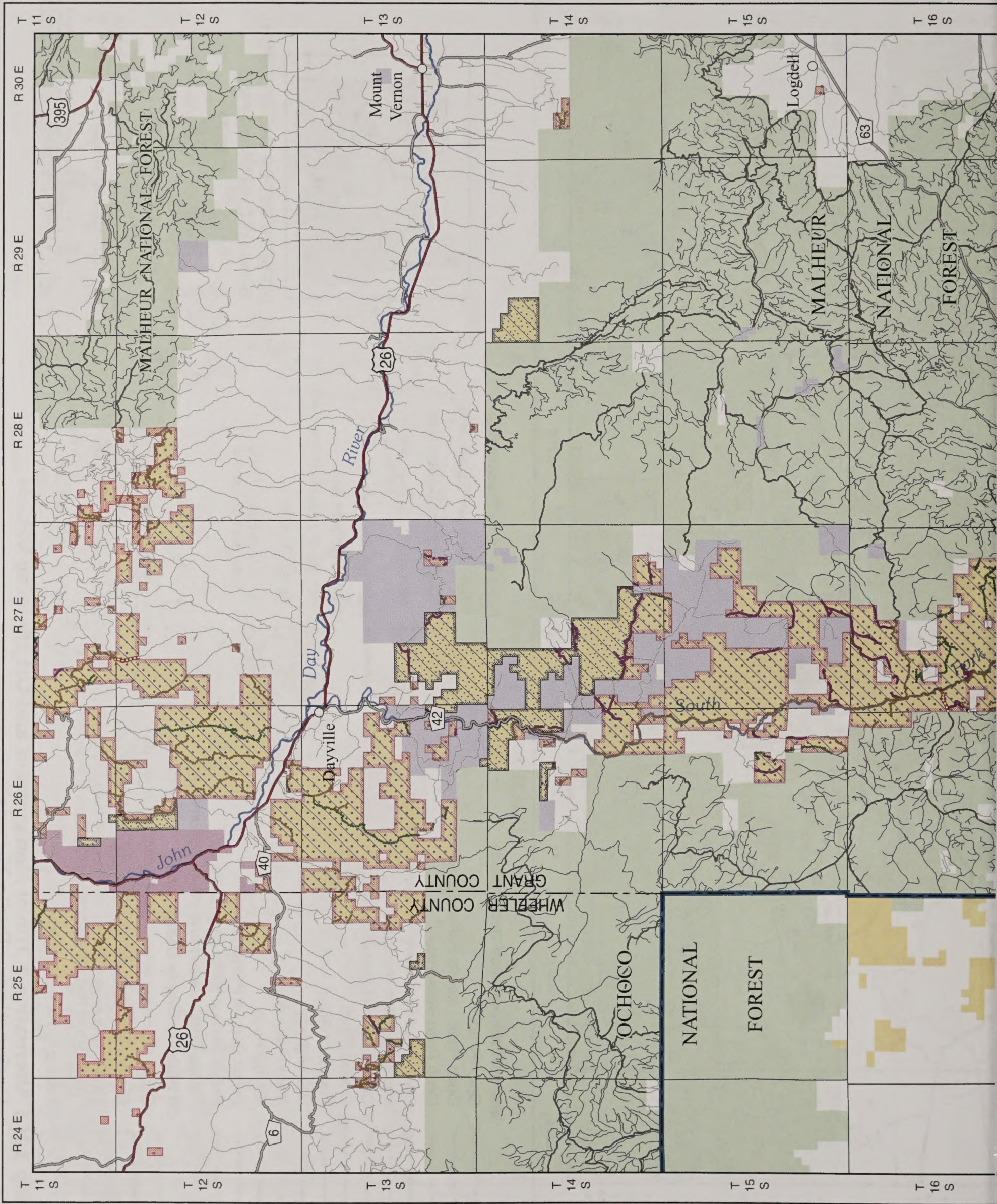
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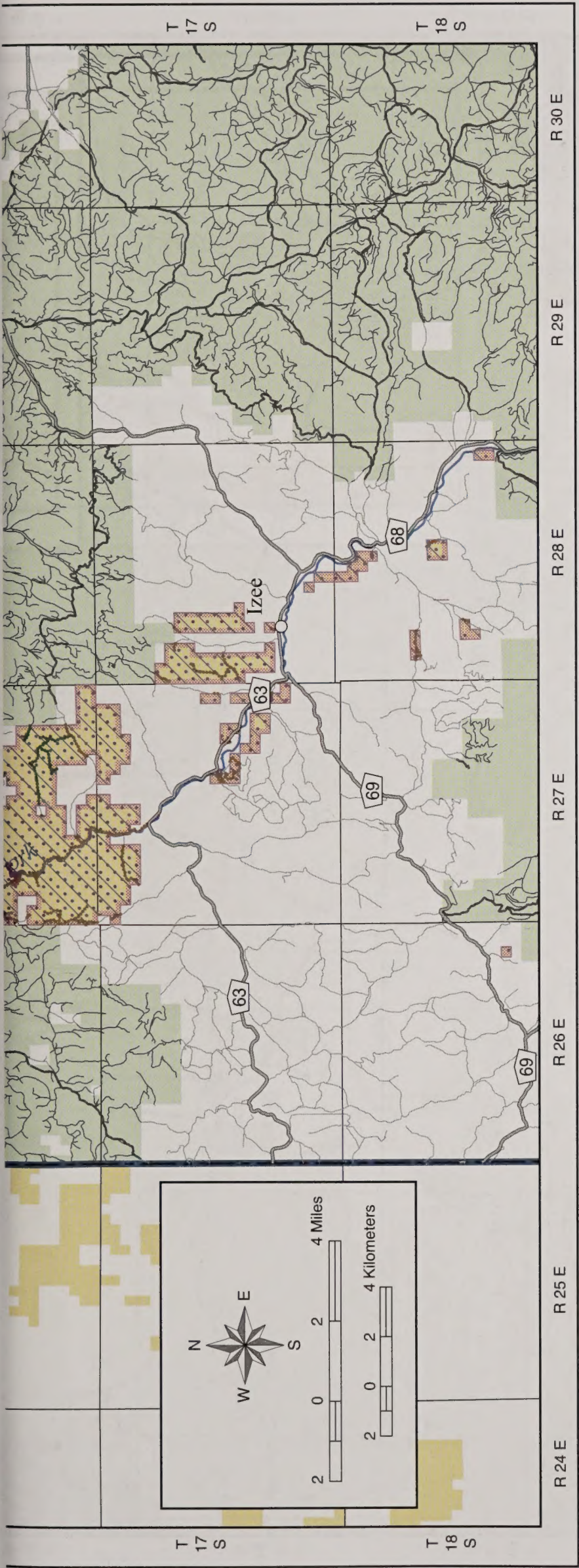
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Map 14C: Alternative 3 Travel Management and Off Highway Vehicle Designations - Rudio Mountain









LEGEND

Interim Transportation Designation

- Open Road
- Open Road - Needs Rehabilitation
- Open Road Seasonally
- Closed Road
- Proposed Road
- U.S. Highway
- State Highway
- County Road
- Forest Service Primary Route
- Forest Service Secondary Route
- Private Road- Closed to public use or unknown

Off Highway Vehicle Designation

- Closed- Motorized Vehicle Use Off Roads Prohibited
- Limited- Motorized Vehicle Use Limited to Designated Roads and Trails, Seasonally, or by Type of Vehicle
- Seasonal Motor Vehicle Restrictions

Road Density Prescription

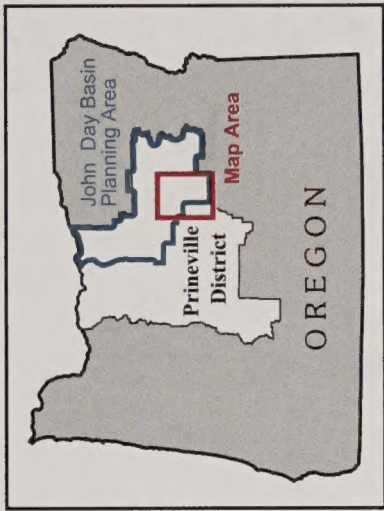
- Zero Miles per Square Mile
- Two Miles per Square Mile

Planning Area Boundary

Administered Land

- Bureau of Land Management
- Forest Service
- John Day Fossil Beds National Monument
- State
- Private or Other

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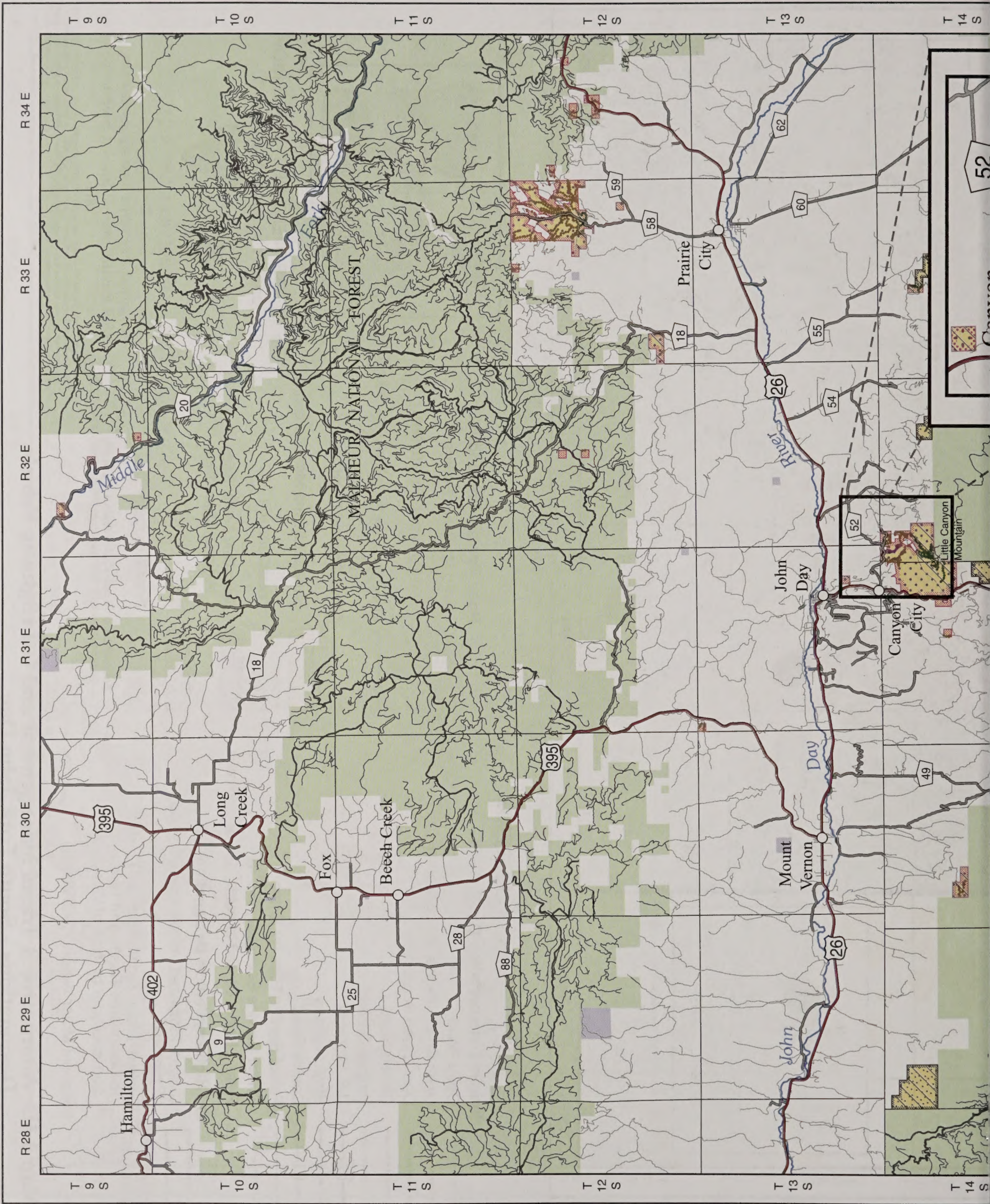
2012

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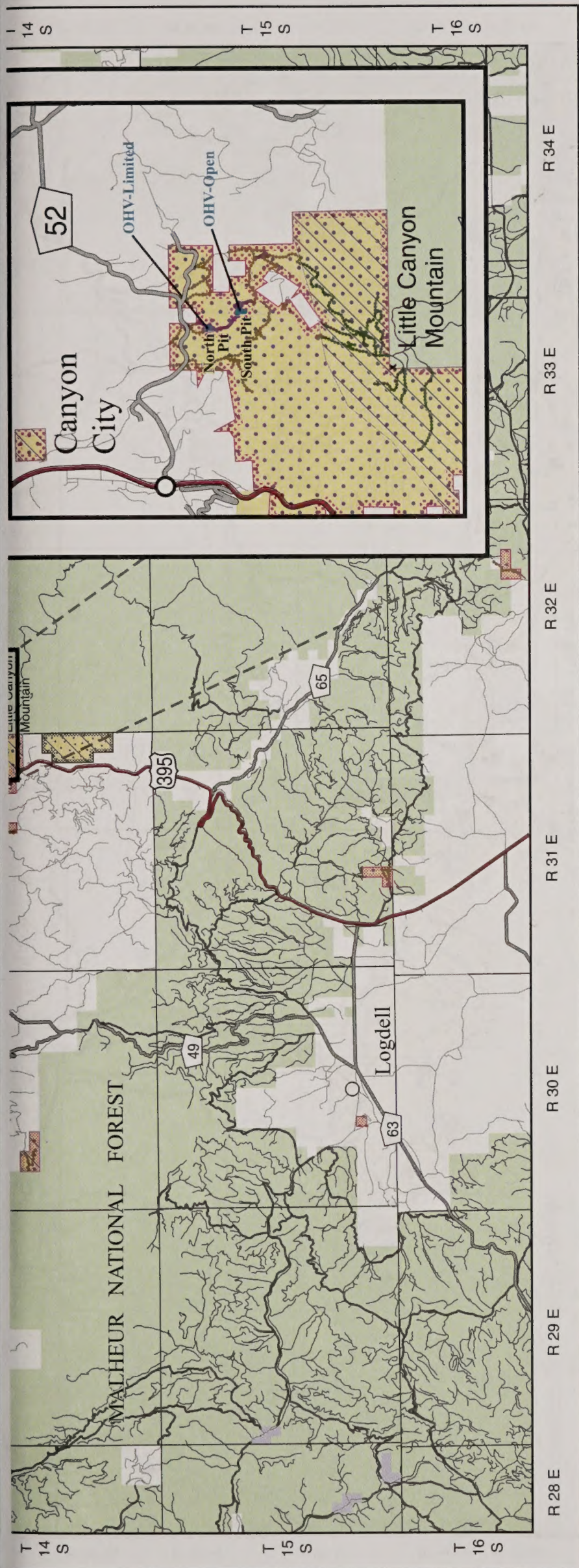
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Map 14D: Alternative 3 Travel Management and Off Highway Vehicle Designations - South Fork John Day









## LEGEND

### Interim Transportation Designation

- Open Road
- Open Road Seasonally
- Closed Road
- U.S. Highway
- State Highway
- County Road
- Forest Service Primary Route
- Forest Service Secondary Route
- Private Road- Closed to public use or unknown

### Off Highway Vehicle Designation

- Closed- Motorized Vehicles Use Off Roads Prohibited
- Limited- Motorized Vehicle Use Limited to Designated Roads and Trails, Seasonally, or by Type of Vehicle
- Seasonal Motor Vehicle Restrictions

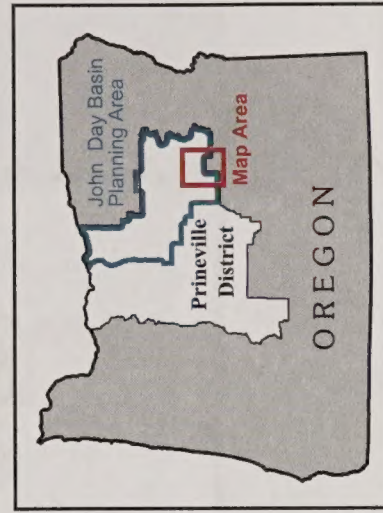
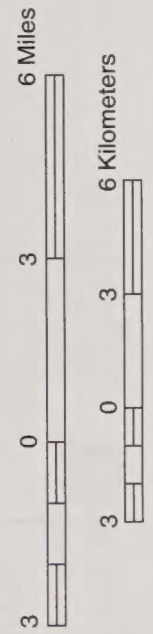
### Road Density Prescription

- Zero Miles per Square Mile
- Two Miles per Square Mile

### Administered Land

- Bureau of Land Management
- Forest Service
- State
- Private or Other

\* Note: Access to some areas listed as open may require landowner permission to cross private lands



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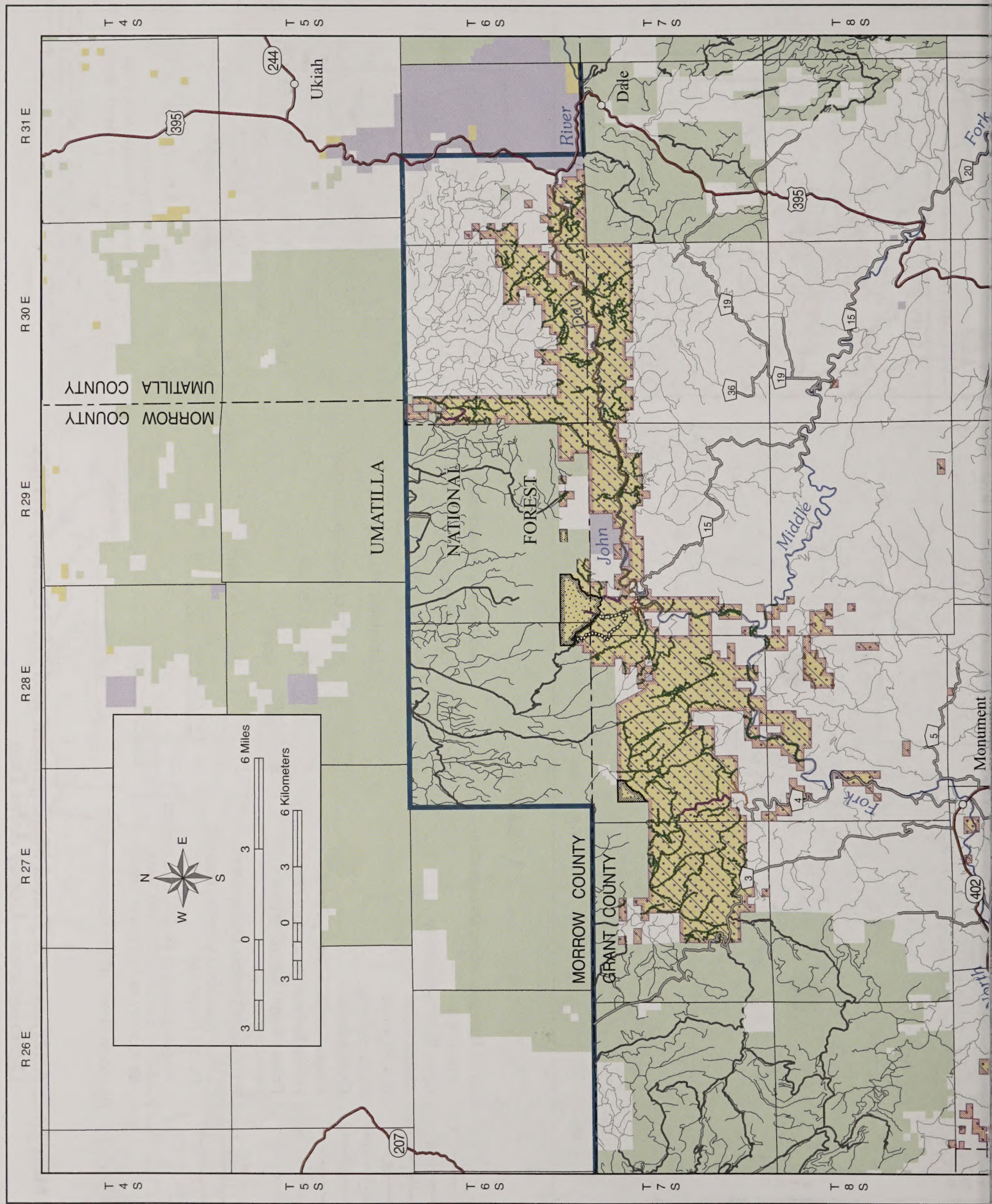
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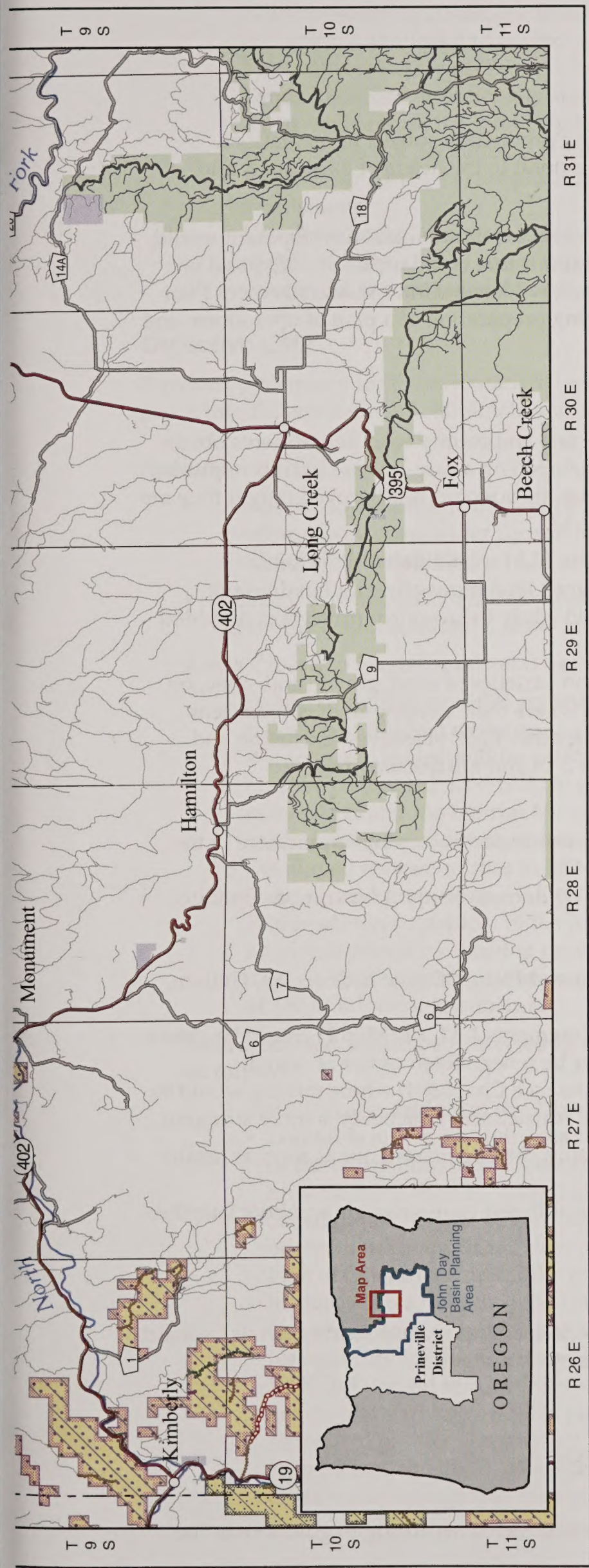
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Map 14E: Alternative 3 Travel Management and Off Highway Vehicle Designations - Upper John Day









LEGEND

Interim Transportation Designation

- Open Road
- Open Road - Needs Rehabilitation
- Open Road Seasonally
- Open Road Seasonally - Needs Rehabilitation
- County Road Seasonally
- Closed Road
- Proposed Road
- U.S. Highway
- State Highway
- County Road
- Forest Service Primary Route
- Forest Service Secondary Route
- Private Road- Closed to public use or unknown

Off Highway Vehicle Designation

- Closed- Motorized Use Off Roads Prohibited
- Limited- Motorized Vehicle Use Limited to Designated Roads and Trails, Seasonally, or by Type of Vehicle
- Seasonal Motor Vehicle Restrictions

Road Density Prescription

- Zero Miles per Square Mile
- Two Miles per Square Mile

Planning Area Boundary

Administered Land

- Bureau of Land Management
- Forest Service
- John Day Fossil Beds National Monument
- State
- Private or Other

\* Note: Access to some areas listed as open may require landowner permission to cross private lands

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Map 14F: Alternative 3 Travel Management and Off Highway Vehicle Designations - North Fork John Day



## Energy and Mineral Resources

### Management Common to All Alternatives

#### Objective EM1

Provide opportunity for salable minerals exploration, development, and production subject to regulations, standard requirements and stipulations to protect the environment. Respond to the needs of local, state, and federal agencies, and the public for salable mineral materials.

- Where necessary to protect important lands and resources, mineral exploration and development would be subject to additional terms, conditions and special considerations that could include no disposal of mineral materials; no surface occupancy; no ground disturbance; wilderness Interim Management Plan non-impairment standard; special design requirements requiring preparation of a plan of operations; and seasonal or other restrictions.

#### Actions

- The salable mineral program involves several quarries where state and county road departments obtain rock for road surfacing material. New quarry sites may be developed on a case-by-case basis if requested by the state, counties, or other governmental entities. In all cases, they would be approved only if they are consistent with the RMP objectives and as identified in Table 2-14.
- Where BLM owns only the subsurface mineral management, the BLM would defer to the land management plan of the surface manager. If the surface manager's land management plan does not address BLM's planning criteria in Appendix A, the BLM would apply the resource protection provided for similar lands in this approved RMP.
- Continue to make available salable minerals, including common varieties of sand, gravel, and stone, on BLM-managed lands within the John Day Basin Planning area where their development is consistent with the protection of other resource values and while attaining other RMP objectives. Exclusion and avoidance areas common to all alternatives are shown in Table 2-14 and are discussed below.

#### Areas Closed to salable mineral use of all levels include:

- Wilderness Areas. Existing rights may continue, but must be conducted according to guidance in the Wilderness Act.
- Wilderness Study Areas; see Interim Management Plan and Wilderness Study Area section. Conduct site-specific analysis and protect values of WSA.
- Public Water Reserve 107s.
- Areas visible from the John Day River between the Columbia and Picture Gorge in Sherman, Gilliam, Jefferson, Wheeler, and Wasco counties.
- All the river corridors (see glossary) of the John Day Rivers (segments 1-11, see Map 1) would be closed to new sites. When they expire, existing permits would either be renegotiated or not renewed:
  - Within 0.25 mile of rivers, adopt State Scenic Waterway rules (see Chapter 4) where mining would be subject to stipulations to protect river values, or the federal restrictions, whichever is more stringent.
- Ongoing salable mineral activity on lands acquired in the future shall be phased out as soon as legally possible.
- Developed recreation sites in SRMAs and facilities such as established campgrounds and boat launches (existing and proposed).

#### Objective EM2

Provide leasing opportunity for leasable minerals (such as oil, gas, geothermal energy, and solid minerals), subject to standard lease requirements and standard stipulations to protect the environment.

#### Actions

- Areas requiring protection are listed in Table 2-14 and as follows:

#### Areas Closed to leasable mineral use of all levels include:

- Wilderness Areas. Existing rights may continue, but must be conducted according to guidance in the Wilderness Act.



- Wilderness Study Areas; see Interim Management Plan and Wilderness Study Area section. Conduct site-specific analysis and protect values of WSA.
- Public Water Reserve 107s.
- Lands identified as nationally significant or visually sensitive.
- Areas visible from the John Day River between its confluence with the Columbia River through Picture Gorge use is not permitted if it will attract attention or leave long-term visual changes on the land.
- For all river corridors (see glossary) of the John Day Rivers (segments 1-11, see Map), including future acquisitions.
- Developed recreation sites in SRMAs and boat launches (existing and proposed). Areas within 0.25 mile of Bridge, Bear, Gable, and Nelson Creeks. If mineral extraction is not considered feasible under these conditions, the area would not be available.

### **Objective EM3**

Provide opportunity for the exploration, location, development, and production of locatable minerals while protecting the environment. Eliminate and rehabilitate abandoned mine hazards (locatable minerals).

### **Actions**

- Areas not specifically withdrawn from mineral entry under the Mining Law of 1872, as amended, would continue to be open under the mining laws to help meet the demand for minerals. (See Appendix M – Existing Withdrawals.)
- Mineral exploration and development on public land is regulated under 43 CFR 3809 to prevent unnecessary or undue land degradation. Areas requiring protection are listed in Table 2-14 and are as follows:

#### **Areas Closed to locatable mineral use of all levels include:**

- Public Water Reserve 107s are withdrawn to maintain water for public livestock and domestic use as specified in original withdrawal order.
- Wilderness Areas would be withdrawn from mineral entry. Valid existing rights may continue, but must be conducted according to guidance in the Wilderness Act. Wilderness Study Areas should be managed under the Interim Management Policy for Lands under Wilderness Review. Conduct site-specific analysis and protect values of WSAs.
- Developed recreation sites in SRMAs and facilities such as established campgrounds and boat launches (existing and proposed).
- Within all river corridors of the John Day Rivers (segments 1-11, see Map 1) all current or proposed administrative sites, existing power site withdrawals, riparian plant cultivation areas, campgrounds, day use, and boat ramp areas would be withdrawn from locatable mineral entry under the Mining Law of 1872 for locatable minerals.

#### **Resources that would be protected by avoidance and special stipulations are listed in Table 2-14 and are as follows:**

- For all river corridors of the John Day Rivers (segments 1-11, see Map 1):
  - Locatable mineral activity shall conform to the State Scenic Waterway requirements (see Appendix C) or the regulations of the federal government, whichever requirements are more stringent. Locatable mineral entry shall be subject to stipulations that protect water quality and native vegetation. Stipulations include, but are not limited to; those for screening and road building restrictions and others in the State Scenic Waterways (see Appendix C). All lands in the river corridors are subject to a Plan of Operations under the regulations at 43 CFR 3809.
  - In areas visible from the John Day River between its confluence with the Columbia River through Picture Gorge use is not permitted if it will attract attention or leave long-term visual changes on the land.
  - Navigability for the John Day River from Tumwater Falls, upriver to Kimberly, was determined in 2005 and upheld in court. Outcomes from State land ownership of the bed and banks of this river are currently unknown. This plan recognizes State navigability, but due to the uncertainty does not attempt to predict potential actions approved by the State of Oregon that could enhance or degrade river values, or alter BLM management. The BLM would continue to work proactively with State agencies to manage this river corridor consistent with Federal and State regulations.



### **Objective EM4**

Respond to the needs of local, state, and federal agencies, and the public for salable mineral materials consistent with stipulations and restrictions identified in Objective EM1.

#### **Actions**

- Continue to make available permitted salable minerals, including common varieties of sand, gravel, and stone, at 15 sites on BLM-managed lands within the John Day Basin planning area. The salable mineral program involves several quarries where state and county road departments obtain rock for road surfacing material. New quarry sites may be developed on a case-by-case basis if requested by the state, counties, or other governmental entities. In all cases, they would be approved only if they are consistent with the protection of other values in the river corridor.

### **Management Common to All Action Alternatives**

#### **Objective EM5**

Provide opportunity for salable minerals exploration, development, and production subject to existing regulations, standard requirements, stipulations and special terms and conditions to protect the environment. Respond to the needs of local, state, and federal agencies, and the public for salable mineral materials.

#### **Actions**

- All exploration and development would require bonded reclamation plans and approval of plans of operations to meet plan objectives.
- In addition to those identified in Common to All Alternatives, the following areas have been identified as exclusion (closed) and avoidance areas for these alternatives as summarized in Table 2-14 and as specified below:

**Areas excluded from salable mineral use and recommended for withdrawal from the salable material use include:**

- Segments of the North Fork John Day River determined to be Suitable for designation as a Wild and Scenic River. (This direction continues existing management.)
- Proposed developed recreation sites in Special Recreation Management Areas, including but not limited to the two along the North Fork John Day River and one site on South Fork John Day River.
- The recreational mining site to be developed near Dixie and Standard Creeks. Allow only recreational gold mining as follows: Seasonal and disturbance area restrictions may be applied to protect Bull Trout and salmonid habitat. No dredging. Gold panning must be in compliance with state regulations and is further limited to recreational, non-mechanized gold panning use. Permits must allow access for recreational gold panning. Disturbance area is limited to one cubic yard per 100 feet of stream length.
- Horn Butte ACEC - Existing rights would be renegotiated to protect ACEC values.
- Black Canyon ACEC/RNA, North Fork John Day ACEC, Armstrong Canyon (except existing PGE pipeline right-of-way). Ferry Canyon and Horn Butte Fourmile ACECs.
- Areas identified for protection of wilderness characteristics would be protected by conducting site-specific analysis and identifying necessary protections for the wilderness characteristics. Existing permits would be renegotiated.
- Lower John Day ACEC (excepting existing OGE pipeline right-of-way). Contingent on underlying WSA lands being dropped from consideration for Wilderness by Congress.

**A No Surface Occupancy (NSO) stipulation would be applied to exploration and development on the following lands:**

- Exclude mineral use within flood-prone area. Avoid surrounding Riparian Management Areas (see Chapter 2, Aquatics). If NSO is not possible, activities must not retard attainment of Aquatic objectives (see Aquatic Conservation Strategy for ID Team review). Survey for cultural resources prior to action and cease work and/or mitigate effects if cultural resources are found.

**Areas where salable mineral use would be avoided or, if avoidance is not possible, available with special terms, conditions, considerations, and BMPs (see Appendix B) include:**



- Areas within 0.5 mile from the entrance and 0.5 mile on each side of centerline along the length of any significant cave.
- Land with occupied bighorn sheep habitat.
- Wildlife security areas (more than  $\frac{2}{3}$  mile from existing roads and facilities). Designate uses on existing routes and obliterate existing linear disturbances to mitigate road densities. Avoid areas with good habitat security.
- Areas within 200 yards of known sensitive plant populations. Follow BMPs (see Appendix B).
- Old growth forest or juniper woodland. Avoid loss of old growth trees. No permanent structures. Mitigation may include permanent protection of other unprotected old growth areas.
- Areas within one tree length from identified snag patches.
- BLM lands with occupied bighorn sheep habitat.
- Areas within 3 miles of sage-grouse leks. Limit construction of features that create habitat for sage-grouse predators (e.g., perches).
- Sensitive soils. When developing or approving new facilities, trade expansion of soil disturbance area with proportional restoration, rehabilitation, decommissioning, or obliteration of preexisting disturbed areas. Require 2 years of follow-up monitoring of erosion control measures and revegetation success. Irrigation and more mature plant sizes may be required to improve probability of planting success. Bonded reclamation plans are required (see Chapter 2 Soils).
- Source water protections areas. Mineral operations are not allowed if they use mercury, cyanide, or other toxics. Mineral operations cannot facilitate high risk uses in Source Water Areas. High risk uses include, but are not limited to, high density housing and mining with toxic chemicals.
- Domestic water sources (all domestic water sources not covered under the Source Water Protection Avoidance Area). Use Best Management Practices (see Appendix B). Prohibit introduction of contaminants to or disruption of source ground water during the interception of precipitation, infiltration of surface water, and transport or storage of ground water.
- John Day Paleontology ACEC. Inventory proposed action area to mitigate loss of paleontological resources. A plan of operations is required prior to any BLM authorizations.

### **Objective EM6**

Provide leasing opportunity for leasable minerals (such as oil, gas, geothermal energy, and solid minerals), subject to standard lease requirements, standard stipulations, terms, conditions and constraints to protect the environment.

### **Actions**

- Provide opportunities for carbon storage at depleted oil and gas wells connecting to geologic formations that are compatible with carbon capture. Areas available for carbon storage are the same as those areas available for oil and gas development, subject to stipulations to attain aquatic, wildlife, air quality, vegetation and soils objectives.
- All exploration and development would require bonded reclamation plans and approval of plans of operations to meet plan objectives.
- In addition to those identified in Common to All Alternatives, the following areas have been identified as closed and avoidance areas for these alternatives as summarized in Table 2-14 and as specified below.

#### **Areas closed to leasable mineral use and recommended for withdrawal from the mining laws include:**

- The recreational mining site to be developed near Dixie and Standard Creeks. Allow only recreational gold mining as follows: Seasonal and disturbance area restrictions may be applied to protect bull trout and salmonid habitat. No dredging. Gold panning must be in compliance with state regulations and is further limited to recreational, non-mechanized gold panning use. Permits must allow access for recreational gold panning. Disturbance area is limited to one cubic yard per 100 feet of stream length.

#### **A No Surface Occupancy stipulation would be applied to exploration and development on the following lands:**

- Areas within 200 yards of known sensitive plant populations.
- Areas within 3 miles of sage-grouse leks. Limit construction of features that create habitat for sage-grouse predators (e.g., perches).
- Proposed developed recreation sites in Special Recreation Management Areas, including but not limited to the two along the North Fork John Day River (School House and Skull Canyon).



- Areas within 0.5 mile from the entrance and 0.5 mile on each side of centerline along the length of any significant cave.
- Areas within Riparian Management Areas (see Chapter 2 Aquatics). The ID Team review and Best Management Practices are required (see Appendix B). Activities must not retard attainment of Aquatic objectives. Exclude use within flood-prone areas. Survey for cultural resources prior to action; cease work and/or mitigate effects if resources are found.
- In the John Day Paleontology ACEC. Inventory proposed action area to mitigate loss of paleontological resources.
- Horn Butte ACEC outside the Fourmile tract. If avoidance is not possible, available if consistent with ACEC values and stipulations to protect Washington ground squirrel and curlew.
- Black Canyon ACEC/RNA. If avoidance is not possible, do not disturb natural processes and conditions of vegetative community for current and future research needs.
- North Fork John Day ACEC. Protect or enhance the most sensitive of visual, recreational, fish, and wildlife values. Protect or enhance free-flowing nature of rivers and streams.
- Armstrong Canyon, Ferry Canyon, and Horn Butte Fourmile ACECs.
- Lower John Day ACEC (excepting existing OGE pipeline right-of-way). Contingent on underlying WSA lands being dropped from consideration for Wilderness by Congress.
- Areas identified for protection of wilderness characteristics would be protected by conducting site-specific analysis and identifying necessary protections for the wilderness characteristics. Existing permits would be renegotiated.

**Areas where leasing would be avoided or available with special stipulations include:**

- Wildlife security areas (more than  $\frac{2}{3}$  mile from existing roads and facilities). Designate uses on existing routes and obliterate existing linear disturbances to mitigate road densities. Avoid areas with good habitat security.
- Old growth forest or juniper woodland. Avoid loss of old growth trees; mitigation may include permanent protection of other unprotected old growth areas.
- Areas within one tree length from identified snag patches.
- Sensitive soils. When developing or approving new facilities, trade expansion of soil disturbance area with proportional restoration, rehabilitation, decommissioning, or obliteration of pre-existing disturbed areas. Require 2 years of follow-up monitoring of erosion control measures and re-vegetation success. Irrigation and more mature plant sizes may be required to improve probability of planting success.
- Source water protection areas. Mineral operations that use mercury, cyanide, or other toxics are not allowed. Mineral operations cannot facilitate high risk uses in Source Water Areas. High risk uses include, but are not limited to: high density housing and mining with toxic chemicals.
- Domestic water sources (all domestic water sources not covered under the Source Water Protection Avoidance Area). Use Best Management Practices (see Appendix B). Prohibit introduction of contaminants to or disruption of source ground water during the interception of precipitation, infiltration of surface water, and transport or storage of ground water.

**Objective EM7**

Provide opportunity for the exploration, location, development, and production of locatable minerals while using terms, conditions, and special considerations to protect the environment. Eliminate and rehabilitate abandoned mine hazards.

**Actions**

- All exploration and development would require bonded reclamation plans and approval of plans of operations to meet plan objectives.
- In addition to those identified in Common to All Alternatives, the following areas have been identified as closed and avoidance areas for these alternatives as summarized in Table 2-14 and as specified below.

**Areas that would be withdrawn (closed) from locatable mineral use include:**

- Proposed developed recreation sites in Special Recreation Management Areas, including but not limited to the two along the North Fork John Day River (School House and Skull Canyon).
- Horn Butte ACEC outside the Fourmile tract. If avoidance is not possible, available consistent with ACEC values and stipulations to protect Washington Ground Squirrel and curlew. A plan of operations is required prior to any BLM authorizations.



- Black Canyon ACEC/RNA. If avoidance is not possible, available if consistent with ACEC values. Do not disturb natural processes and conditions of vegetative community for current and future research needs. A plan of operations is required prior to any authorization by the BLM.
- North Fork John Day ACEC. Protect or enhance the most sensitive of visual, recreational, fish, and wildlife values. Protect or enhance free-flowing nature of rivers and streams.
- Armstrong Canyon, Ferry Canyon, and Horn Butte Fourmile ACECs.
- Lower John Day ACEC (excepting existing OGE pipeline right-of-way). Contingent on underlying WSA lands being dropped from consideration for Wilderness by Congress.
- The recreational mining site to be developed near Dixie and Standard Creeks. Allow only recreational gold mining as follows: Seasonal and disturbance area restrictions may be applied to protect Bull Trout and Salmonid habitat. No dredging. Gold panning must be in compliance with state regulations and is further limited to recreational, non-mechanized gold panning use. Permits must allow access for recreational gold panning. Disturbance area is limited to one cubic yard per 100 feet of stream length.

**Areas where locatable mineral extraction would be avoided or available with special stipulations include:**

- Areas within 0.5 mile from the entrance and 0.5 mile on each side of centerline along the length of any significant cave.
- Land with occupied bighorn sheep habitat.
- Wildlife security areas (more than  $\frac{2}{3}$  mile from existing roads and facilities). Designate uses on existing routes and obliterate existing linear disturbances to mitigate road densities. Avoid areas with good habitat security.
- Areas within 200 yards of known sensitive plant populations.
- Old growth forest or juniper woodland. Avoid loss of old growth trees. Mitigation may include permanent protection of other unprotected old growth areas.
- Areas within one tree length from identified snag patches.
- Areas within 3 miles of sage-grouse leks. Limit construction of features that create habitat for sage-grouse predators (e.g., perches).
- Sensitive soils. When developing or approving new facilities, trade expansion of soil disturbance area with proportional restoration, rehabilitation, decommissioning, or obliteration of pre-existing disturbed areas. Require 2 years of follow-up monitoring of erosion control measures and re-vegetation success. Irrigation and more mature plant sizes may be required to improve probability of planting success.
- Areas within Riparian Management Areas (see Chapter 2 Aquatics). ID Team review and Best Management Practices are required (see Appendix B). Activities must not retard attainment of Aquatic objectives. Exclude use within flood-prone areas. Survey for cultural resources prior to action; cease work and/or mitigate effects if resources are found.
- Source water protection areas. Mineral operations that use mercury, cyanide, or other toxics are not allowed. Mineral operations cannot facilitate high risk uses in Source Water Areas. High risk uses include, but are not limited to: high density housing, and mining with toxic chemicals.
- Domestic water sources (all domestic water sources not covered under the Source Water Protection Avoidance Area). Use Best Management Practices (see Appendix B). Prohibit introduction of contaminants to or disruption of source ground water during the interception of precipitation, infiltration of surface water, and transport or storage of ground water.
- John Day Paleontology ACEC. Inventory proposed action area to mitigate loss of paleontological resources. A plan of operations is required prior to any BLM authorizations.
- Areas identified for protection of wilderness characteristics. If avoidance is not possible, conduct site-specific analysis and protect wilderness characteristic of specific wilderness character area. Surface disturbance (exploration, ingress, egress, and development) cannot impair wilderness characteristics. A plan of operations is required prior to any authorization by the BLM.



**Table 2-14. Areas Subject to Restrictions of Minerals, Rights-of-Way, Renewable Energy, Communication Sites, and Facilities.**

- Restrictions include: (see glossary for expanded definitions)
- Closed (currently withdrawn or proposed for withdrawal)
- Avoid (special stipulations, terms, conditions and consideration)
- No Surface Occupancy (NSO)
- Where overlapping direction is given, the most stringent applies (i.e., closed would be applied over an avoidance area).
- Renewable energy includes but is not limited to wind and solar power, and is generally associated with a right-of-way.
- Required Stipulations, Terms and Conditions are listed in this table, by specific resource/resource use direction in this chapter, and as described in Appendix B – Best Management Practices.

Alternative(s)	Areas Subject to Restrictions	Salable/Locatable	Leasable/Geothermal	Renewable Energy, Communication Sites, Facilities, and Rights-of-Way
Common to All	Developed recreation sites in SRMAs and boat launches (existing and proposed).	Closed. Also includes Administrative sites.	No Surface Occupancy (NSO).	Available. Subject to standard stipulations, terms, and conditions.
Common to All	BLM lands providing bighorn sheep habitat in the vicinity of Aldrich Mountain.	Available. Subject to standard stipulations, terms, and conditions.	Available. Subject to standard stipulations, terms, and conditions.	Avoid. If avoidance is not possible available with terms and conditions.
Common to All	BLM lands within the Murderers Creek Cooperative Wildlife Management Area.	Available. Subject to standard stipulations, terms, and conditions.	Available. Subject to standard stipulations, terms, and conditions.	Avoid. If avoidance is not possible available with standard stipulations.
Common to All	Areas within 0.25 mile of Bridge, Bear, Gable, and Nelson Creeks.	Available. Subject to standard stipulations, terms, & conditions.	No Surface Occupancy (NSO). Avoid. If extraction of the mineral is not considered feasible under these conditions, the area would not be available.	Available. Subject to standard stipulations, terms, and conditions.
Common to All	South Fork of the John Day River Canyon, from Deer Creek to the junction of the South Fork road with Grant County Road no. 42.	Available. Subject to standard stipulations, terms, and conditions.	Available. Subject to standard stipulations, terms, and conditions.	Avoid. If avoidance is not possible available with terms and conditions.



Table 2-14. Areas Subject to Restrictions of Minerals, Rights-of-Way, Renewable Energy, Communication Sites, and Facilities.

Alternative(s)	Areas Subject to Restrictions	Salable/Locatable	Leasable/Geothermal	Renewable Energy, Communication Sites, Facilities, and Rights-of-Way
Common to All	Wilderness	<b>Closed.</b> Existing rights may continue, but must be conducted according to guidance in the Wilderness Act.	<b>Closed.</b> Existing rights may continue, but must be conducted according to guidance in the Wilderness Act.	<b>Closed.</b>
Common to All	WSAs	<b>Closed.</b> IMP (see Wilderness Study Area section). Conduct site-specific analysis and protect values of WSA. Section 202 WSAs are available for Locatable minerals use.	<b>Closed.</b> IMP (see Wilderness Study Area section). Conduct site-specific analysis and protect values of WSA. Section 202 WSAs are available for Locatable minerals use.	<b>Closed.</b> Conduct site-specific analysis for protection of values of WSA. Use Interim Management Policy for Lands Under Wilderness Review (IMP).
Common to All	PWR 107 water sources	<b>Withdrawn.</b> Maintain water right for public livestock and domestic use as specified in original withdrawal order.	<b>Withdrawn.</b> Maintain water right for public livestock and domestic use as specified in original withdrawal order.	<b>Withdrawn.</b> Maintain water right for public livestock and domestic use as specified in original withdrawal order.
Common to All	Areas visible from the John Day River from the Columbia through Picture Gorge in Sherman, Gilliam, Jefferson, Wheeler, and Wasco Counties. Includes future acquisitions.	<b>Salable - Closed</b> to new sites. When they expire, existing permits would be either renegotiated or not renewed. Phase out activity on acquired lands as soon as legally possible. <b>Locatable - Avoid</b> – Sites may be permitted if they do not attract attention or leave long term visual changes on the land and are not visible from areas normally seen from the John Day River.	<b>No Surface Occupancy (NSO).</b> NSO would be required upon renewal of existing leases and permits. All activities would use existing roads to the extent possible. Activities visible from the John Day River would not be permitted.	<b>Closed</b> to new sites. Must use existing utility and rights-of-way corridors.



Table 2-14. Areas Subject to Restrictions of Minerals, Rights-of-Way, Renewable Energy, Communication Sites and Facilities.

Alternative(s)	Areas Subject to Restrictions	Salable/Locatable	Leasable/Geothermal	Renewable Energy, Communication Sites, Facilities, and Rights-of-Way
Common to All	<b>River Corridors</b> (see glossary) (See Map 1) Includes future acquisitions.	<p><b>Salable</b> - Closed to new sites. When they expire, existing permits would be either renegotiated or not renewed. Phase out activity on acquired lands as soon as legally possible.</p> <p><b>Locatable</b> - <b>Avoid</b>. Permitted sites would not be normally visible from the John Day River. Within 0.25 mile of river manage consistent with State Scenic Waterway Rules as published in Appendix C or requirements of the federal restrictions, whichever is more stringent.</p> <p>Plan of Operations, Terms, conditions, and special considerations must:</p> <ul style="list-style-type: none"> <li>• Protect water quality, native vegetation and ORVs of WSRs.</li> <li>• Prevent sediment from entering river or tributaries, protect riparian vegetation, prevent noxious weed establishment and spread, and protect recreation facilities.</li> </ul>	<b>No Surface Occupancy (NSO)</b> . NSO would be required upon renewal of existing leases and permits. All activities would use existing roads to the extent possible. Activities visible from the John Day River would not be permitted.	<b>Closed to new sites</b> . Must use existing utility and rights-of-way corridors. Protect and enhance the most sensitive of visual, recreational, fish, wildlife, and Outstandingly Remarkable Values. Protect and enhance free-flowing nature of rivers and streams.
Alternative 1	<b>Areas within PACFISH Riparian Habitat Conservation Areas</b>	<p><b>Salable</b> - <b>No Surface Occupancy (NSO)</b></p> <p>Prohibit new leases, sand and gravel extraction and salable mineral sites unless no other options exist.</p> <p><b>Locatable</b> - <b>Avoid</b>.</p>	<b>No Surface Occupancy (NSO)</b> . Prohibit new leases, sand and gravel extraction and salable mineral sites unless no other options exist.	<b>Avoid</b> . Terms and conditions include not retarding attainment of PACFISH Riparian Management Objectives.



Table 2-14. Areas Subject to Restrictions of Minerals, Rights-of-Way, Renewable Energy, Communication Sites and Facilities.

Alternative(s)	Areas Subject to Restrictions	Salable/Locatable	Leasable/Geothermal	Renewable Energy, Communication Sites, Facilities, and Rights-of-Way
Alternative 1	Horn Butte ACEC	<b>Avoid.</b> If avoidance is not possible, available with stipulations to protect Curlew. Limit vehicle travel to existing roads and trails.	<b>Avoid.</b> If avoidance is not possible, available with stipulations to protect Curlew.	<b>Closed.</b>
Alternatives 2, 3, 5	Suitable Wild and Scenic River – North Fork John Day	See management of River Corridors – in Common to All above.	See management of River Corridors – in Common to All above.	See management of River Corridors – in Common to All above.
Alternatives 2–5	Developed recreation sites in the North Fork SRMA and 2 campgrounds.	<b>Closed.</b> Also includes Administrative sites.	<b>No Surface Occupancy (NSO).</b>	<b>Available.</b> Subject to standard stipulations, terms, and conditions.
Alternatives 2–5	0.5 mile from entrance and 0.5 mile on each side of centerline along length of any significant cave.	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations and specific BMPs (see Appendix B).	<b>No Surface Occupancy (NSO).</b> <b>Avoid.</b> If avoidance is not possible, available with special stipulations.	<b>Avoid.</b> If avoidance is not possible, first consider locating along existing utility corridors, county roads, or BLM system roads. Prohibit new uses within 0.5 mile of entrances to any cave unless no reasonable alternative routes are available. Where a new right-of-way cannot be reasonably accommodated outside of the 0.5-mile buffer, first consider locating along existing utility corridors, county roads, or BLM system roads.
Alternatives 2–5	<b>Wildlife security areas</b> (areas greater than $\frac{2}{3}$ mile from existing roads and facilities).	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations plus: Designate uses on existing routes; obliterate existing linear disturbances to mitigate road densities; avoid areas with good habitat security.	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations plus: Designate uses on existing routes; obliterate existing linear disturbances to mitigate road densities; avoid areas with good habitat security.	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations plus: Designate uses on existing routes; obliterate existing linear disturbances to mitigate road densities; avoid areas with good habitat security.



Table 2-14. Areas Subject to Restrictions of Minerals, Rights-of-Way, Renewable Energy, Communication Sites and Facilities.

Alternative(s)	Areas Subject to Restrictions	Salable/Locatable	Leasable/Geothermal	Renewable Energy, Communication Sites, Facilities, and Rights-of-Way
Alternatives 2-5	Areas within 200 yards of known sensitive plant populations	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations and specific BMPs (see Appendix B).	<b>No Surface Occupancy (NSO).</b> <b>Avoid.</b> If avoidance is not possible, available with special stipulations.	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations and specific BMPs (see Appendix B).
Alternatives 2-5	Old growth forest or juniper woodland	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations and specific BMPs (see Appendix B) plus: No permanent structures. Avoid loss of old growth trees; mitigation may include permanent protection of other unprotected old growth areas.	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations plus: No permanent structures. Avoid loss of old growth trees; mitigation may include permanent protection of other unprotected old growth areas.	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations plus: No permanent structures. Avoid loss of old growth trees; mitigation may include permanent protection of other unprotected old growth areas.
Alternatives 2-5	Areas within 1 tree length from identified snag patches	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations and specific BMPs (see Appendix B).	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations and specific BMPs (see Appendix B).	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations and specific BMPs (see Appendix B).
Alternatives 2-5	BLM lands with occupied bighorn sheep habitat	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations and specific BMPs (see Appendix B).	<b>Available.</b> Subject to standard stipulations, terms, and conditions.	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations, terms and conditions.
Alternatives 2-5	Areas within 3.0 miles of sage-grouse lek	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations and specific BMPs (see Appendix B). Limit construction of features that create habitat for sage-grouse predators (e.g., perches).	<b>No Surface Occupancy (NSO).</b> <b>Avoid.</b> If avoidance is not possible, available with standard stipulations plus: Follow BMPs (see Appendix B). Limit construction of features that create habitat for sage-grouse predators (e.g., perches).	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations and specific BMPs (see Appendix B). Limit construction of features that create habitat for Sage-grouse predators (e.g., perches).



Table 2-14. Areas Subject to Restrictions of Minerals, Rights-of-Way, Renewable Energy, Communication Sites and Facilities.

Alternative(s)	Areas Subject to Restrictions	Salable/Locatable	Leasable/Geothermal	Renewable Energy, Communication Sites, Facilities, and Rights-of-Way
Alternatives 2-5	Sensitive Soils	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations and specific BMPs (see Appendix B). When developing or approving new facilities, trade expansion of soil disturbance area with proportional restoration, rehabilitation, decommissioning, or obliteration of pre-existing disturbed areas. Require 2 years of follow-up monitoring of erosion control measures and re-vegetation success. Irrigation and more mature plant sizes may be required to improve probability of planting success. Bonded reclamation plans are required.	<b>Avoid.</b> If avoidance is not possible available with standard stipulations plus: Follow BMPs (see Appendix B). When developing or approving new facilities, trade expansion of soil disturbance area with proportional restoration, rehabilitation, decommissioning, or obliteration of pre-existing disturbed areas. Require 2 years of follow-up monitoring of erosion control measures and re-vegetation success. Irrigation and more mature plant sizes may be required to improve probability of planting success. Bonded reclamation plans are required.	<b>Avoid.</b> If avoidance is not possible available with standard stipulations plus: Follow BMPs (see Appendix B). When developing or approving new facilities, trade expansion of soil disturbance area with proportional restoration, rehabilitation, decommissioning, or obliteration of pre-existing disturbed areas (see Chapter 2 Soils). Require 2 years of follow-up monitoring of erosion control measures and re-vegetation success. Irrigation and more mature plant sizes may be required to improve probability of planting success. Bonded reclamation plans are required.
Alternatives 2-5	Domestic Water Sources (within 500 feet)	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations and specific BMPs (see Appendix B). Prohibit introduction of contaminants to or disruption of source ground water during the interception of precipitation, infiltration of surface water, and transport or storage of ground water.	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations plus: Use BMPs (see Appendix B). Prohibit introduction of contaminants to or disruption of source ground water during the interception of precipitation, infiltration of surface water, and transport or storage of ground water.	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations plus: Use BMPs (see Appendix B). Prohibit introduction of contaminants to or disruption of source ground water during the interception of precipitation, infiltration of surface water, and transport or storage of ground water.



Table 2-14. Areas Subject to Restrictions of Minerals, Rights-of-Way, Renewable Energy, Communication Sites and Facilities.

Alternative(s)	Areas Subject to Restrictions	Salable/Locatable	Leasable/Geothermal	Renewable Energy, Communication Sites, Facilities, and Rights-of-Way
Alternatives 2-5	Source Water Protection Areas (SWPAs)	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations and specific BMPs (see Appendix B) plus: Mineral operations are not allowed if they use mercury, cyanide, or other toxics. Mineral operations cannot facilitate high risk uses in Source Water Protection Areas. High risk uses include but are not limited to: high density housing, and mining with toxic chemicals.	<b>Avoid.</b> Available with standard stipulations plus use BMPs (see Appendix B). High risk uses in Source Water Protection Areas are not allowed. High risk uses include, but are not limited to high density housing, and use of toxic chemicals.	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations and BMPs (see Appendix B). Prohibit introduction of contaminants to or disruption of source ground water during the interception of precipitation, infiltration of surface water, and transport or storage of ground water. The right-of-way cannot facilitate high risk uses in Source Water Protection Areas. High risk uses include but are not limited to: high density housing, and mining with toxic chemicals.
Alternatives 2-5	Areas within RMAs	<p><b>Salable - No Surface Occupancy (NSO).</b> Prohibit extraction in floodprone area. Avoid salable mineral use in surrounding RMAs; if NSO is not possible, activities must not retard attainment of Aquatic objectives. Survey for cultural resources prior to action; cease work and/or mitigate effects if cultural resources are found.</p> <p><b>Locatable - Avoid.</b> If avoidance is not possible, available with standard stipulations plus: ID team review and BMPs are required (see Appendix B). Mineral activities must not retard attainment of Aquatic Objectives. Exclude mineral use within flood-prone areas.</p>	<b>No Surface Occupancy (NSO).</b>	<p><b>Avoid. No Surface Occupancy (NSO)</b> for renewable energy and communication sites. BMPs are mandatory (see Appendix B). Rights-of-way that interact with stream channels, floodplains and lentic areas must not prohibit attainment of ACS objectives. Cultural clearance of the area is required for initial approval, and subsequently encountered cultural resources would require cessation and mitigation for affected cultural resources. A narrower site-specific avoidance area could be identified and reviewed by an ID team if all resources objectives are measurably achieved.</p>



Table 2-14. Areas Subject to Restrictions of Minerals, Rights-of-Way, Renewable Energy, Communication Sites and Facilities.

Alternative(s)	Areas Subject to Restrictions	Salable/Locatable	Leasable/Geothermal	Renewable Energy, Communication Sites, Facilities, and Rights-of-Way
Alternatives 2-5	Recreational Mining site near Dixie and Standard Creeks (2-5 only)	<b>Closed.</b> Allow only recreational gold mining as follows: Seasonal and disturbance area restrictions may be applied to protect Bull Trout and Salmonid habitat. No dredging. Gold panning must be in compliance with state regulations and is further limited to recreational non-mechanized gold panning use. Permits must allow access for recreational gold panning. Disturbance areas limited to one cubic yard per 100 feet of stream length.	<b>Closed.</b> Allow only recreational gold mining as follows: Seasonal and disturbance area restrictions may be applied to protect Bull Trout and Salmonid habitat. No dredging. Gold panning must be in compliance with state regulations and is further limited to recreational non-mechanized gold panning use. Permits must allow access for recreational gold panning. Disturbance areas limited to one cubic yard per 100 feet of stream length.	<b>Available</b> with standard stipulations, terms and conditions.
Alternatives 2-5	<b>John Day Paleontology ACEC</b>	<b>Avoid.</b> If avoidance is not possible, available with standard stipulations and specific BMPs (see Appendix B) plus: Inventory proposed action area to mitigate loss of paleontological resources. A plan of operations is required prior to any BLM authorizations.	<b>No Surface Occupancy (NSO).</b> <b>Avoid.</b> If avoidance is not possible, available with standard stipulations plus: Inventory proposed action area to mitigate loss of paleontological resources.	<b>Avoid.</b> If avoidance is not possible, conduct paleontological inventories of proposed action area to mitigate for loss of paleontological resources due to site disturbance at construction or during subsequent use.
Alternatives 2-5	<b>Horn Butte ACEC</b>	<b>Closed.</b> Existing rights would be negotiated to protect ACEC values. Limit vehicle travel to existing roads and trails.	<b>No Surface Occupancy (NSO).</b> <b>Avoid.</b> If avoidance is not possible, available if consistent with ACEC values with Stipulations to protect Washington Ground Squirrel and curlew.	<b>Closed.</b>
Alternatives 2-5	<b>Black Canyon ACEC/RNA</b>	<b>Closed.</b>	<b>No Surface Occupancy (NSO).</b> <b>Avoid.</b> If avoidance is not possible, available with standard stipulations plus: Do not disturb natural processes and conditions of vegetative community for current and future research needs.	<b>Closed.</b>



Table 2-14. Areas Subject to Restrictions of Minerals, Rights-of-Way, Renewable Energy, Communication Sites and Facilities.

Alternative(s)	Areas Subject to Restrictions	Salable/Locatable	Leasable/Geothermal	Renewable Energy, Communication Sites, Facilities, and Rights-of-Way
Alternatives 2-5	North Fork John Day ACEC	Closed.	<b>No Surface Occupancy (NSO).</b> <b>Avoid.</b> If avoidance is not possible, available with standard stipulations plus: Protect or enhance the most sensitive of visual, recreational, fish, and wildlife values. Protect or enhance free-flowing nature of rivers and streams.	Closed.
Alternatives 2-5	Armstrong Canyon (except existing PGE pipeline right-of-way), Ferry Canyon, and Horn Butte Fourmile ACECs additions.	Closed.	<b>No Surface Occupancy (NSO).</b> <b>Generally Closed.</b> Available if consistent with ACEC values.	Closed. Manage under Interim Management Policy (IMP) until all or part of the underlying WSA lands are dropped from consideration for wilderness by Congress.
Alternatives 2--	Lower John Day ACEC (excepting existing PGE pipeline right-of-way). Contingent on underlying WSA lands being dropped from consideration for Wilderness by Congress.	Closed.	<b>No Surface Occupancy (NSO).</b> <b>Avoid.</b> If avoidance is not possible, available with standard stipulations plus: Manage under Interim Management Policy (IMP) unless all or part of the underlying WSA lands are dropped from consideration for wilderness by Congress, and require a plan of operations.	Closed. Manage under Interim Management Policy (IMP) until all or part of the underlying WSA lands are dropped from consideration for wilderness by Congress.
Alternatives 2-5	Areas identified for protection of wilderness characteristics.	<b>Salable - Closed.</b> <b>Locatable - Avoid.</b> If avoidance is not possible, available with standard stipulations plus: Conduct site-specific analysis and protect wilderness characteristic of the specific area. Surface disturbance (exploration, ingress, egress, and development) cannot impair wilderness character. Existing permits will be renegotiated.	<b>No Surface Occupancy (NSO).</b> <b>Avoid.</b> If avoidance is not possible, available with standard stipulations plus: Conduct site-specific analysis and protect wilderness characteristic of specific area. A plan of operations is required prior to any authorization by the BLM.	Closed. Conduct site-specific analysis for protection of wilderness characteristic of specific area.



**Objective EM8**

In an environmentally sound manner, create a recreational mining area where the general public can pan for gold with a reasonable prospect of success.

**Actions**

- Identify a 20-acre area where the public can visit and recreationally pan for gold. One area that could potentially offer such an experience is along Standard and Dixie Creeks. Once identified on the ground, recommend the area for closure and withdrawal from the general mining laws and implement a site-specific plan for the area.

**Lands and Realty****Management Common to All Alternatives****Objective LR1**

Create a land base that facilitates attainment of resource and resource use objectives.

**Actions**

- Classify land as Zone 1 (Z-1), Zone 2 (Z-2) or Zone 3 (Z-3) (see glossary).
  - Z-1 applies to lands with high public values. Retain Z-1 lands in public ownership.
  - Z-2 lands are not as valuable as Z-1, and can be retained or exchanged for lands with higher public value. Lands in Z-2 would be available for exchange to enhance public resource values; improve management capabilities; reduce the potential for land use conflict; or where the public expressed specific interest for land exchanges (e.g., Rudio Mountain, Johnson Heights, and Muddy Creek).
  - Z-3 lands have low public value, or are small or isolated. Dispose of Z-3 lands (sell or exchange them for lands with higher public value). Small and isolated parcels that do not serve the national interest would be available for disposal [FLPMA Section 102(a) (1)]. Disposal requires site-specific analysis based on the criteria identified for each zone.
  - Lands identified for disposal (Z-3) in a BLM land use plan prior to July 25, 2000, and still identified as Z-3 in the current plan, would be available for disposal under legislation similar to the Federal Land Transaction Facilitation Act of 2000 (FLTFA). This allows a portion of the receipts from sale of the land or interests in the land to be retained by BLM.
  - All lands determined to be eligible under the Recreation and Public Purposes Act (R&PP) are available for R&PP sale and lease applications. Individual applications for R&PP sales and leases will be considered on a site-specific basis. Authorizations require compliance with all land use plan objectives.
- The BLM-administered lands within Wild and Scenic Rivers are withdrawn from disposal via sale. Public lands within the Wild and Scenic Rivers may be exchanged for private lands of equal or greater value that are within the boundaries of the Wild and Scenic River. Table 2-15 summarizes some lands suitable for acquisition.
- Within the Wild and Scenic River corridors, the following parcels are currently identified for disposal: RM 112; T8S, R19E, Section 4, SE ¼ (15.3 acres) and RM 119; T8S, R19E, Section 25, NW ¼ (10.3 acres).
- The lands on Table 2-15 were identified as suitable for acquisition in the John Day River Plan.

**Objective LR2**

Assure legal and physical access to public lands with important resource values. Maintain the availability of public lands for utility and transportation corridors and local rights-of-way. Maintain the availability of public lands for use, occupancy, and development while sustaining resource values. Provide for testing, production, transmission and conservation of energy while maintaining safety, public health, and environmental protections.

**Actions**

- Properly authorize all uses of BLM public lands within the planning area.
- Avoid the proliferation of separate rights-of-ways.
- Existing rights-of-way are shown in Appendix L.



Table 2-15. Lands Suitable for Acquisition (carried forward from John Day River Plan)

Parcel #	Location	Estimated Acres	Comment
1	T. 9 S., R. 23 E., section 18, SE $\frac{1}{4}$ NE $\frac{1}{4}$	5.83	Acquire Service Creek launch site from ODOT as agreed.
1a	T. 9 S., R. 22 E., section 28, portions of E $\frac{1}{2}$ SW $\frac{1}{4}$ , South of JDR section 32, SW $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$ E $\frac{1}{2}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$	248	Consolidate public lands.
1b	T. 9 S., R. 22 E., section 23, SW $\frac{1}{4}$ NW $\frac{1}{4}$	40	Consolidate public lands.
1c	T. 9 S., R. 22 E., section 32, SE $\frac{1}{4}$ SW $\frac{1}{4}$	40	Consolidate public lands.
1d	T. 9 S., R. 22 E., section 13, portions of NE $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$	80	Consolidate public lands, recreation site potential.
1e	T. 9 S., R. 22 E., section 23, NE $\frac{1}{4}$ SW $\frac{1}{4}$	40	Consolidate public lands, acquire for campsites.
1f	T. 9 S., R. 22 E., section 22, S $\frac{1}{2}$ SW $\frac{1}{4}$ section 27, NW $\frac{1}{4}$ NW $\frac{1}{4}$ section 28, N $\frac{1}{2}$ NE $\frac{1}{4}$	200	Consolidate public lands, acquire for campsites.
2	T. 10 S., R. 22 E., section 6, NW $\frac{1}{4}$	60	Acquire for campsites.
6	T. 1 S., R. 19 E., section 14, S $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ section 15, NW $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ section 22, S $\frac{1}{2}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ section 23, W $\frac{1}{2}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$	440	Consolidate public lands.
7	T. 1 S., R. 19 E., section 4, SW $\frac{1}{4}$ section 9, NW $\frac{1}{4}$ N $\frac{1}{2}$ SW $\frac{1}{4}$ section 16, NW $\frac{1}{4}$ NE $\frac{1}{4}$	440	Acquire access.
8	T. 1 S., R. 20 E., section 6, SW $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ section 7, E $\frac{1}{2}$ NW $\frac{1}{4}$ W $\frac{1}{2}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ section 8, N $\frac{1}{2}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$	600	Acquire access.
9	T. 1 N., R. 19 E., section 3, S $\frac{1}{2}$ S $\frac{1}{2}$	160	Acquire Oregon Trail Segment.
2a	T. 10 S., R. 22 E., section 5, NW $\frac{1}{4}$ NE $\frac{1}{4}$	40	Consolidate public land.
3	T. 9 S., R. 21 E., section 32, portions of N $\frac{1}{2}$ NW $\frac{1}{4}$ , north of John Day River	15	Consolidate public lands, acquire for campsites.
3a	T. 9 S., R. 21 E., section 32, N $\frac{1}{2}$ NE $\frac{1}{4}$ section 33, NW $\frac{1}{4}$ NW $\frac{1}{4}$ , all north of John Day River	31	Consolidate public lands, acquire for campsites.



Table 2-15. Lands Suitable for Acquisition (carried forward from John Day River Plan)

Parcel #	Location	Estimated Acres	Comment
3b	T. 9 S., R. 21 E., section 28, SE $\frac{1}{4}$ SW $\frac{1}{4}$ , north of John Day River	6	Consolidate public land.
4	T. 7 S., R. 19 E., section 32, SW $\frac{1}{4}$ NE $\frac{1}{4}$	1.86	Acquire Clarno Launch/Landing from OPRD as agreed.
5	T. 1 S., R. 19 E., section 19, SE $\frac{1}{4}$ SW $\frac{1}{4}$	1	Acquire the small sliver of private land between BLM and OPRD.
5a	T. 1 S., R. 19 E., section 17, SE $\frac{1}{4}$ SW $\frac{1}{4}$	7.12	Acquire Cottonwood launch/landing from OPRD as agreed.
9a	T. 1 N., R. 19 E., section 11, NW $\frac{1}{4}$	20	Provide additional parking and boat launch.
10	T. 4 S., R. 18 E., section 11, W $\frac{1}{2}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ section 14, NW $\frac{1}{4}$ NW $\frac{1}{4}$	160	Consolidate public land in Wilderness study area.
11	T. 3 S., R. 18 E., section 35, S $\frac{1}{2}$ SW $\frac{1}{4}$ T. 4 S., R. 18 E., section 2, NW $\frac{1}{2}$ NW $\frac{1}{4}$	160	Consolidate public land in Wilderness study area.
12	T. 3 S., R. 18 E., section 14, N $\frac{1}{2}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$	160	Consolidate public land in Wilderness study area.
13	T. 2 S., R. 18 E., section 13, SW $\frac{1}{4}$ SW $\frac{1}{4}$ section 24, W $\frac{1}{2}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ S $\frac{1}{2}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$	320	Consolidate public land in Wilderness study area.
14	T. 8 S., R. 19 E., section 36, NW $\frac{1}{4}$ NW $\frac{1}{4}$	40	Acquire poor condition land for rehabilitation and campsite potential.
15	T. 5 S., R. 19 E., section 30, NE $\frac{1}{4}$ SE $\frac{1}{4}$	40	Consolidate public land in Wilderness study area.
16	T. 1 S., R. 19 E., section 19, LOT 7, 8, and 12 section 30, NW $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$ , LOT 1 and 7	320	
16a	T. 1 S., R. 19 E., section 32, SW $\frac{1}{4}$ NW $\frac{1}{4}$	40	
16b	T. 1 S., R. 19 E., section 32, SW $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ E $\frac{1}{2}$ SW $\frac{1}{4}$ W $\frac{1}{2}$ SE $\frac{1}{4}$	240	
17	Cherry Creek		Preserve undeveloped character of the area.
Total Acres (Approximate)		4,036	



- Review applications on an individual basis for conformance with the RMP objectives to minimize conflicts with other resources or users. Public lands would continue to be available for local rights-of-way, including multiple use and single use utility/transportation corridors, following existing routes, communication sites, and roads, except as limited in Table 2-14.
- Leases and/or patents would continue to be available under the Recreation and Public Purposes Act. Other permits or leases for development of public lands would also continue. Applications for these activities would be reviewed for conformance with other resource or use objectives and minimal conflict.
- The map "Land Tenure—Existing," the map "Land Tenure—Common to All Action Alternatives," and the Lands and Realty description in Chapter 3 identify the six utility and transportation corridors. All major utility construction projects must co-locate within the existing utility corridors. Corridor widths may be up to 2,000 feet, with 1,000 feet on either side of existing right-of-way centerline. If only one side is limited by a Wilderness Study Area, Wilderness, Wild and Scenic River, or ACEC, the overall width remains 2,000 feet with the increase on the opposite side. For utility corridors, the 2,000 feet width could be expanded to accommodate safety concerns.
- Major transportation corridors consist of State Highways 19, 206, 207, 218, 395, and 402; U.S. Highways 26 and 97; and Interstate 84. Corridor widths vary, but are considered to be within the existing right-of-way.
- Rights-of-way, including but not limited to those for road or energy transmission, would follow existing corridors and avoid proliferation of separate rights-of-way. All right-of-way applications would be reviewed using the criteria of following existing corridors and rights-of-way wherever practical and avoiding proliferation of separate rights-of-way.
- Applicants would be encouraged to locate new facilities (including communication sites) adjacent to existing facilities to the extent possible.
- Activities that would result in significant, long-term adverse effects on the lands visible from the John Day River, from the Columbia through Picture Gorge, would not be permitted outside designated utility and transportation corridors.
- There would be no new crossings of Wild and Scenic Rivers or other BLM-managed portions of the river corridors (see Map 15) outside of designated utility and transportation corridors. The entire plan area would be available for existing and potential development of renewable energy projects, communication sites, and other uses unless specifically withdrawn, listed as exclusion areas, and as indicated in Table 2-14.
- Avoidance areas may be available with stipulations, terms and conditions (see Table 2-14).

**Renewable energy testing and development, rights-of-way, communication sites, and/or other facilities would not be allowed in the following exclusion areas:**

- Wilderness Areas.
- Wilderness Study Areas (WSAs).
- Areas of Critical Environmental Concern (ACECs).
- Public Water Reserve 107 (see Appendix L).
- Areas visible from the John Day River between its confluence with the Columbia River through Picture Gorge use is not permitted if it will attract attention or leave long term visual changes on the land.
- For all river corridors (see glossary) of the John Day Rivers (segments 1-11, see Map 1), including future acquisitions.

**The following areas would be avoided when locating renewable energy testing and development, facilities, rights-of-way, and corridor routes:**

- South Fork of the John Day River Canyon, from Deer Creek to the junction of the South Fork Road with Grant County Road No. 42.
- BLM lands providing bighorn sheep habitat in the vicinity of Aldrich Mountain.
- BLM lands within the Murderer's Creek Cooperative Wildlife Management Area.

**Guidelines**

- Approved rights-of-way would use Best Management Practices (see Appendix B).



**Objective LR3**

Protect lands that have important resource values or substantial levels of investment by withdrawing them, where necessary, from the implementation of nondiscretionary public land and mineral laws.

**Actions**

- Proposed withdrawal areas, including existing withdrawals to be continued, modified or revoked are included in Appendix M and Table 2-14. The table also indicates how lands would be managed if the withdrawals were relinquished and an opening order issued (see 43 CFR 2300).
- Certain springs and water holes in the plan area may qualify as a Public Water Reserve No. 107. For these qualifying springs and waterholes, an amount of water necessary to fulfill the primary purposes of the reservation (livestock watering and human consumption) was reserved and entry into these locations is restricted. A partial list is provided in Appendix M, but identification and quantification of these withdrawals is an ongoing process. The BLM will maintain an up-to-date inventory of PWR 107 and submit their claims in any adjudication processes.

**Management Common to All Action Alternatives****Objective LR4**

Create a land base that facilitates management of resource and resource use objectives. Increase the percentage of public land with public access by 10 percent over the life of the plan. Table 2-16 summarizes the amount of the planning area by land tenure zone and alternative. Map 16 displays land tenure zones and areas where lands suitable for acquisition are likely to be located.

**Action**

- The BLM would process withdrawal, revocations, disposals, and acquisitions for BLM and on behalf of other federal agencies.
- Place lands in Zone 1 based on the following criteria:
  - Access is an important consideration, but access alone is not sufficient. Land must provide access to values.
    - Currently there is access, or
    - No access now, but it is possible to get, and the public desires access.
  - Social and economic community uses and values: Contribution to community character, R&PP potential, transportation corridors, grazing, timber, energy, minerals and other use compatibilities, and utility corridors.
  - Cultural, historic, archeological, or tribal values.
  - Open space and visual quality.
  - Recreation use.
  - Critical habitat for sensitive, threatened, endangered species.
  - Important wildlife habitat or ACEC quality.
  - Contribution to vegetation objectives.
  - Water quality, riparian function, or protection and enhancement of Wild and Scenic Rivers.
  - Wilderness and Wilderness Study Areas.
  - National Landscape Conservation System designated lands.
  - Research Natural Areas.
  - Purchase or ensure that subsurface ownership does not conflict with management of surface.

**Table 2-16. Land Tenure Zones by Alternative (acres).**

Land Tenure Zone	Alternative 1	Alternatives 2	Alternative 4	Alternatives 3 & 5
Z-1	222,182	354,887	357,317	357,317
Z-2	193,769	33,253	30,877	30,822
Z-3 (number of these acres available under legislation similar to FLTFA)	40,444 (28,000)	68,192	68,137	68,192 (18,429)
Potentially Suitable for Acquisition	4,036	888,405	888,405	888,405



- All lands blocked up in the Land Exchange Act of 2000 in the North Fork Area would become classified Z-1, except as noted below.
  - In the North Fork area (T6S, R30E, S35), a parcel approximately 2 acres in size that is adjacent to private land would be classified Z-3 to facilitate the sale of the parcel that is difficult to manage. (Due to small size of this parcel, it is not displayed on Map 16.)
- When considering private lands that may be suitable to acquire from willing sellers (Map 16) and place in public ownership, prioritize lands that meet one or more of the following criteria:
  - Are 640 +/- acres or result in public land blocks of approximately 640 acres or more (smaller block with high public value may be considered).
  - Provide access to major rivers and streams.
  - Possess criteria listed above for placement in Z-1.
  - Areas within a 0.25 mile of the main stem John Day River, North Fork John Day River, or South Fork John Day River. This excludes portions of the main stem John Day River upstream of Dayville.
  - Are within the Blue Mountains Ecoregion (south of Butte Creek).
  - Are within a Wilderness Study Area, ACEC, or area managed to protect wilderness character.
  - Connect areas with similar uses, including but not limited to Sutton Mountain/Pine Creek areas (fish and recreation use), or Rudio Mountain/western portion of Malheur National Forest (OHV uses).
  - Total lands acquired, excepting exchanges, may not exceed 2% of the planning area.
- The BLM would seek to acquire subsurface mineral rights for lands managed by the BLM that do not now include subsurface mineral rights. If mineral rights are acquired for lands meeting the "Closed" criteria identified in Table 2-14, they would be recommended for withdrawal.

### **Objective LR5**

Assure legal and physical access to public lands with important resource values. Maintain the availability of public lands for utility and transportation corridors and local rights-of-way. Maintain the availability of public lands for use, occupancy and development while sustaining resource values. Provide for production, transmission and conservation of energy while maintaining safety, public health, and environmental protections.

### **Actions**

- The entire plan area would be available for locating renewable energy, facilities, rights-of-way, and other uses, subject to site-specific consideration of resource objectives and unless specifically withdrawn or listed as an exclusion area (see Table 2-14).

**Renewable energy testing and development, rights-of-way, communication sites, and/or other facilities would not be allowed in the following exclusion areas:**

- Black Canyon ACEC/RNA, North Fork ACEC, Ferry Canyon ACEC, Armstrong Canyon ACEC, and Horn Butte ACEC.
- Lower John Day ACEC (excepting existing OGE pipeline right-of-way). Contingent on underlying WSA lands being dropped from consideration for Wilderness by Congress.
- Areas identified for protection of wilderness characteristics.

**A No Surface Occupancy (NSO) for renewable energy and communication sites applies to the following areas:**

- Riparian management areas.

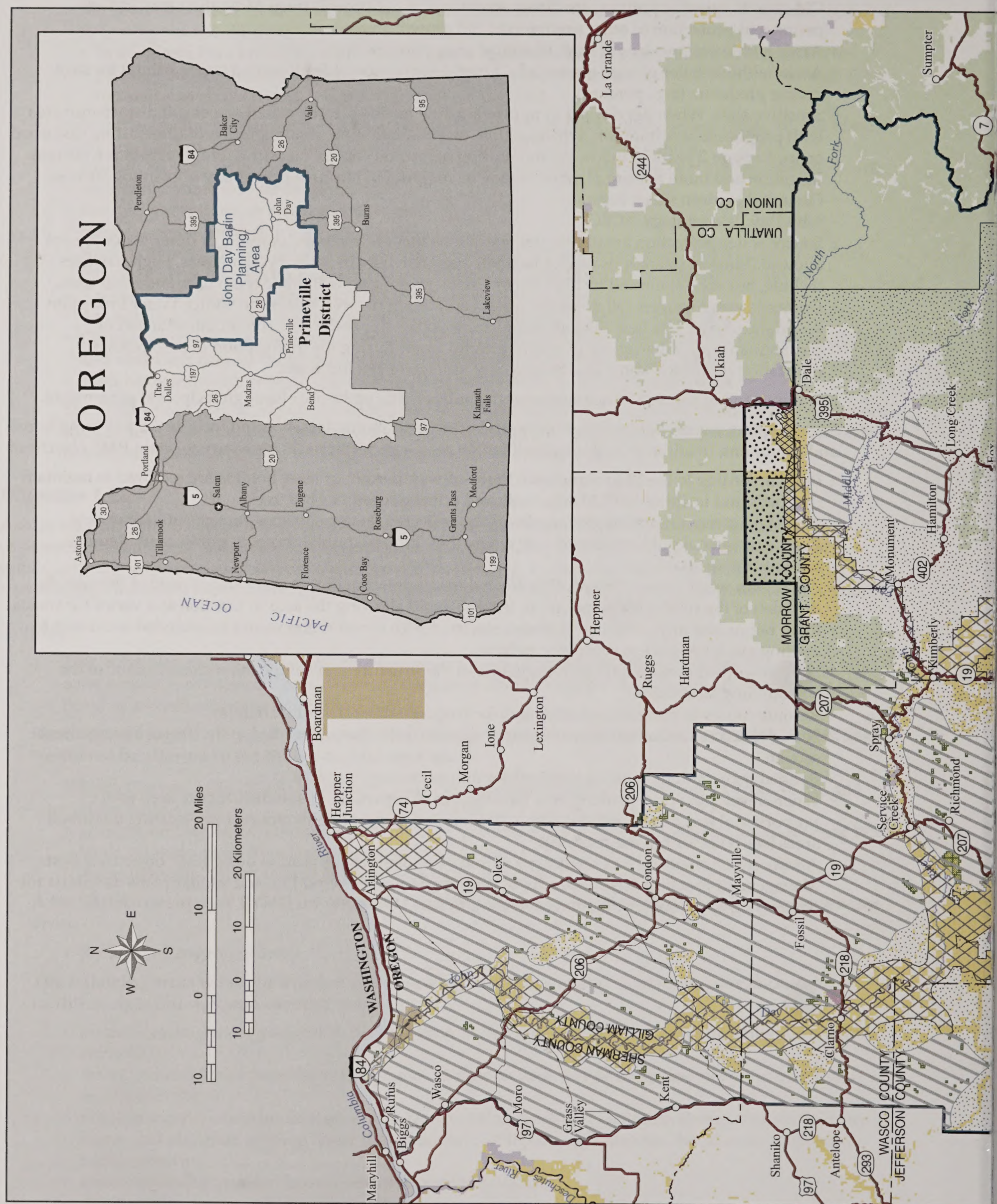
**The following areas would be avoided when locating renewable energy testing and development, facilities, rights-of-way, and corridor routes:**

- Riparian management areas (with the exception of renewable energy and communication sites which are NSO).
- Areas within 0.5 mile from the entrance and 0.5 mile on each side of centerline along the length of any significant cave.
- Wildlife security areas (more than  $\frac{2}{3}$  mile from existing roads and facilities). Designate uses on existing routes and obliterate existing linear disturbances to mitigate road densities. Avoid areas with good habitat security.
- Areas within 200 yards of known sensitive plant populations.

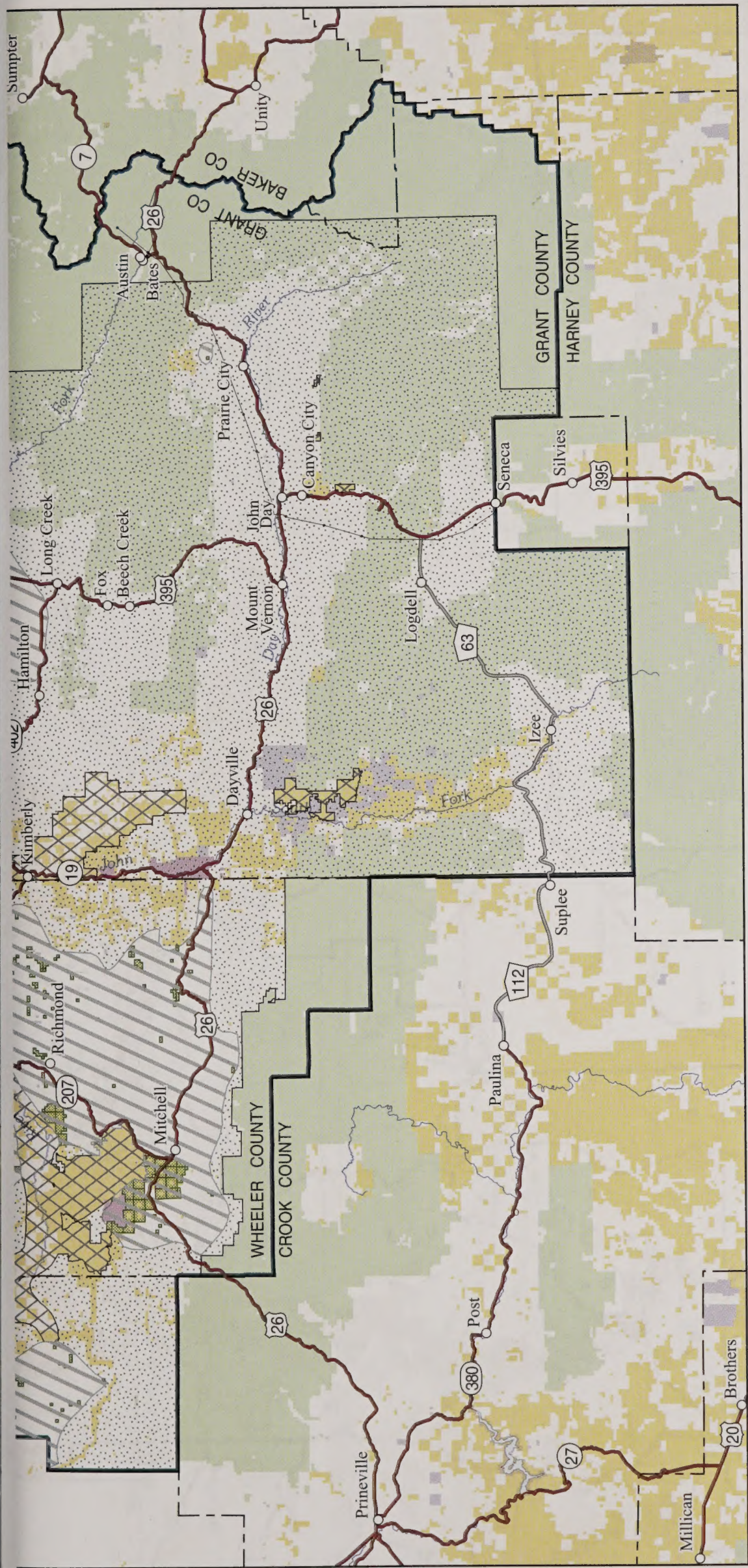


- Old growth forest or juniper woodland. Avoid loss of old growth trees. Mitigation may include permanent protection of other unprotected old growth areas.
- Areas within one tree length from identified snag patches.
- Areas within 3 miles of sage-grouse leks. Limit construction of features that create habitat for sage-grouse predators (e.g., perches).
- Sensitive soils. When developing or approving new facilities, trade expansion of soil disturbance area with proportional restoration, rehabilitation, decommissioning, or obliteration of pre-existing disturbed areas. Require 2 years of follow-up monitoring of erosion control measures and re-vegetation success. Irrigation and more mature plant sizes may be required to improve probability of planting success.
- Occupied bighorn sheep habitat.
- John Day Paleontology ACEC.
- Source water protection areas. Mineral operations that use mercury, cyanide, or other toxics are not allowed. Mineral operations cannot facilitate high risk uses in Source Water Areas. High risk uses include, but are not limited to: high density housing, mining with toxic chemicals, and other uses.
- Domestic water sources (all domestic water sources not covered under the Source Water Protection Avoidance Area). Use Best Management Practices (see Appendix B). Prohibit introduction of contaminants to or disruption of source ground water during the interception of precipitation, infiltration of surface water, and transport or storage of ground water.
- Use right-of-way requests to acquire access to public lands in the area through reciprocal agreements.
- Rights-of-way, renewable energy projects, and other permits and leases would include the following terms and conditions, in addition to those identified on a site-specific basis, as necessary to attain RMP objectives:
  - Build according to the BLM standards. Right-of-way, permit, or lease holders are required to maintain the roads and facilities to BLM standards and achieve resource objectives.
  - Best Management Practices are mandatory, but selected during site-specific right-of-way review.
  - Pursue reciprocal public rights-of-way where they increase public access to public land. Require administrative access.
  - Areas with weed populations shall be treated for a minimum of two years and as needed through the duration of the right-of-way, permit or lease to avoid allowing the area to function as a vector for weeds.
  - Road berms and any disturbance areas associated with construction would be reseeded according to seeding guidelines in the vegetation section.
  - Steep disturbed areas would be revegetated to the structure and composition characteristic of the surrounding landscape.
  - Reroute routes to mitigate and minimize for fragmentation of wildlife habitat.
  - Seasonal access limitations mirror the area-specific restrictions identified in the Travel Management section.
  - Bonded reclamation plans are required for non-permanent projects.
  - When developing or approving new facilities, trade expansion of soil disturbance area with proportional restoration, rehabilitation, decommissioning, or obliteration of pre-existing disturbed areas (see Soils for full description).
  - Additional stipulations and conditions would be applied at application using RMP objectives, Best Management Practices \*see Appendix B), the Programmatic Wind EIS, and similar plans as criteria for developing additional stipulations and conditions.









LEGEND

Resource Management Plan Zone Coding

- Zone 1: Classified for Retention
- Zone 2: Classified for Retention with Option to Exchange
- Zone 3: Classified for Disposal

Baker Resource Management Plan Zone Coding

- Zone 1: Classified for Retention - May be Exchanged for Lands of Equal or Higher Public Value
- Zone 2: Classified for Disposal or Trade
- Eligible for sale under legislation similar to Federal Lands Transaction Facilitation Act
- Utility Corridor

Planning Area Boundary

Administered Land

- Bureau of Land Management
- Forest Service
- John Day Fossil Beds National Monument
- Other Federal
- State
- Private or Other

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PRINEVILLE DISTRICT

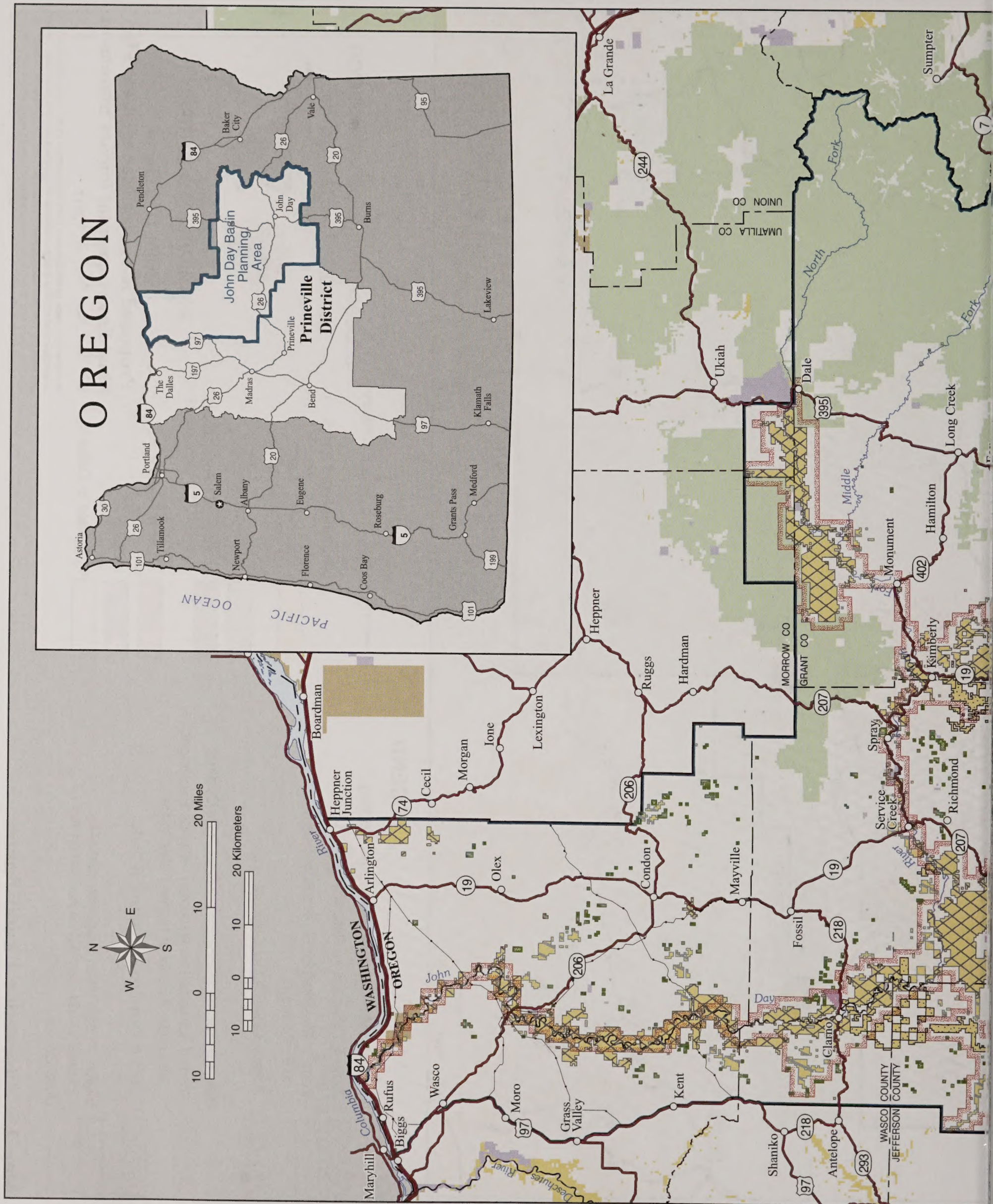
John Day Basin  
Proposed Resource Management Plan  
Final Environmental Impact Statement

2012

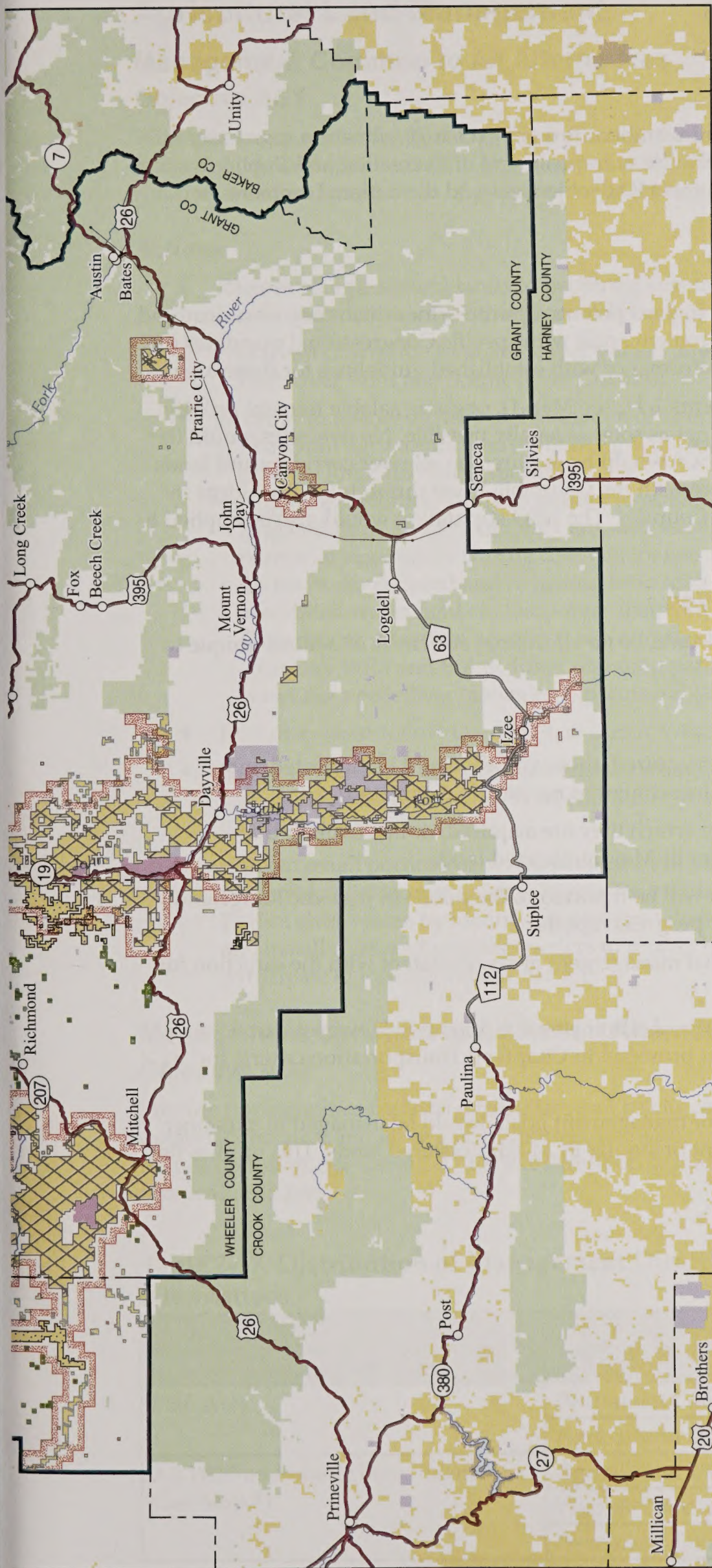
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Map 15: Alternative 1 Land Tenure
















Map 16: Alternatives 2, 3, 4, and 5 Land Tenure

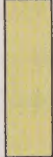



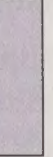

## LEGEND

### Land Tenure Alternatives 2-5

-  Zone 1: Classified for Retention
-  Zone 2: Classified for Retention with Option to Exchange
-  Zone 3: Classified for Disposal
-  Eligible for sale under legislation similar to Federal Lands Transaction Facilitation Act
-  Zoning Acquisition
-  Utility Corridor

 Planning Area Boundary

### Administered Land

-  Bureau of Land Management
-  Forest Service
-  John Day Fossil Beds National Monument
-  Other Federal
-  State
-  Private or Other

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## PRINEVILLE DISTRICT

### John Day Basin Proposed Resource Management Plan Final Environmental Impact Statement

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Map 16: Alternatives 2,3,4, and 5 Land Tenure



## Management of Newly Acquired Lands

### Management Common to All Alternatives

#### Objective AL1

Over the life of the plan, lands may come under BLM administration through exchange, donation, purchase, revocation, or withdrawals to other federal agencies, or through relinquishment of Recreation and Public Purposes Act leases. Management of acquired lands must meet RMP objectives and the national ambient air quality standards as described in the Clean Air Act.

#### Guidelines

- Newly acquired lands would be managed for the highest potential purpose for which they were acquired. For example, lands acquired within special management areas with specific Congressional mandates (i.e., Wild and Scenic Rivers) would be managed in conformance with established guidelines for those areas.
- For lands within John Day River corridors (Segments 1-11, see Map 1), ongoing salable mineral activity on lands acquired in the future would be phased out as soon as legally possible. No new sites would be permitted. A no surface occupancy stipulation (NSO) would be required on all river corridors and lands visible from the John Day River from its confluence with the Columbia River through Picture Gorge in Sherman, Gilliam, Jefferson, Wheeler, and Wasco Counties. The NSO stipulation would also be applied to river corridors in Grant and Umatilla Counties.

### Management Common to All Action Alternatives

Objective AL1 applies to all action alternatives and there would be no additional objectives or actions unique to the action alternatives.

#### Guidelines

- If lands with unique or fragile resource values are acquired, those values would be protected and managed on an interim basis until the next plan amendment or revision is completed.
- Manage newly acquired lands for the purposes for which they are acquired, or in a manner that is consistent with management objectives for adjacent BLM-administered lands.
- Net adjustments in the livestock grazing program will be reported to the public in periodic Rangeland Program Summary Updates, RMP evaluations, or progress reports.
- Manage newly acquired lands contiguous to special management areas consistent with the direction for those special management areas.
- Public access would be provided within BLM legal and administrative potential. However, public access may be either motorized and/or non-motorized, as provided in Chapter 2 Transportation criteria for travel management planning.
- Lands acquired without identified special values or management goals would be managed in a manner consistent with management objectives for adjacent or similar BLM-administered lands. This implies the following use:
  - Typical livestock grazing.
  - Recreation management.
  - Timber harvest opportunities.
  - Vegetation treatments.
  - Management of the mineral estate.
  - Standard operating procedures.
  - Pre-committed mitigation measures.



## Agricultural Land Management

### Management Common to All Alternatives

#### Objective AG1

Within all segments of the John Day River Corridor Segments (see Map 1), protect and enhance river values by managing agricultural lands with emphasis on wildlife habitat, cottonwood stock for reintroduction of hardwood riparian areas, and restoration of perennial vegetation (see Vegetation—Objectives and Actions).

#### Actions

- Restore all agricultural lands to perennial vegetation, with the exception of acres that may be used for hardwood stock, and wildlife food and cover plots (see glossary).
  - Harvest of wildlife food and cover plots is allowable if the harvested crop is utilized within the John Day River Wild and Scenic River Corridor.
- In order to restore agricultural lands not utilized for hardwood stock or wildlife food and cover:
  - Phase-out agricultural use on BLM agricultural lands along river corridors by 2012, with the exception of lands identified for disposal.
  - Irrigate agricultural lands as needed to establish perennial vegetation. Reduce the number of acres irrigated through time, as lands are successfully converted (see glossary for “permanent conversion”) to perennial vegetation. During conversion, native species are preferred over nonnative species.
  - As tracts are restored and irrigation is no longer required for vegetation establishment, transfer associated water rights to temporary instream use in cooperation with Oregon Water Resources Department. Maintain beneficial use of water rights associated with agricultural lands. Cooperate with John Day Wild and Scenic River planning partners (on file at the Prineville District Office) to return water not needed for managing agricultural lands to instream uses.
- Irrigation must follow Oregon State Scenic Waterway rules (see Appendix C).
- Dispose of 26 acres of agricultural land, through the land exchange process, for lands of equal or greater value within the designated Wild and Scenic River boundary (see Table 2-15 and lands zoned Z-3 in the Lands and Realty Section).
- Convert small portions of agricultural lands at John Day River river mile 101.5 and river mile 137 to perennial vegetation in order to open sites for dispersed recreation and increase recreation opportunities. Protect river values by identifying preferred dispersed camping areas that can best handle human use, and install signs and parking barriers to protect riparian vegetation. The ODFW would be requested to participate in locating vehicle barriers.

### Management Common to All Action Alternatives

#### Objective AG2

Provide opportunities for local agriculture and public recreation (e.g., camping, bank fishing, swimming access, upland game bird, and large game hunting); increase riparian areas and John Day Basin wildlife habitat; and reduce pollution. See Table 2-17 for a distribution of management direction for agricultural lands for all of the action alternatives.

**Table 2-17. Distribution of Management Direction for Agricultural Lands for All of the Action Alternatives.**

Alternatives 2–5		
Management Area	Management Action	Acres
Plan Area	Permanent Conversion	100+
	Agricultural Use or Wildlife Food and Cover	0–400
All Wild and Scenic River Segments (See Map 1)	Agricultural Use (after 2011)	0
	Wildlife Food and Cover	0–100
	Permanent Conversion	300+



## Actions

- Maintain 0 to 400 acres of agricultural land as plots for: (a) wildlife food and cover (see glossary), (b) agricultural use (see glossary), or (c) both a and b. These areas may or may not be irrigated.
- Of these 0 to 400 acres, no more than 100 would be available for wildlife food and cover plots within the Wild and Scenic River Corridor, and only 60 of those 100 acres would be irrigated per water year. Up to 1.5 cubic feet per second (cfs) may be diverted to irrigate those 60 acres of wildlife food/cover crop.
- Restore agricultural lands not in agricultural use through propagation of hardwoods for riparian recovery or conversion to wildlife food and cover or permanent conversion (see glossary) to perennial vegetation (see Vegetation—Objectives and Actions).
- Grow hardwood riparian stock for out-planting along agricultural lands, streams, and lentic (see glossary) areas.
- Use portions of agricultural lands to create off-channel habitat and slow water refugia for aquatic species and migratory fish. Remove berms to allow more natural point bar development.
- Address riparian degradation and recreation pressure along lowland agricultural lands outside of actively managed wildlife food and cover plots using one or more of the following tools:
  - Creating dispersed recreation areas.
  - Enhancing or creating developed recreation areas.
  - Creating trails, barriers (mostly natural) and other opportunities away from flood-prone and cultivated areas.
- Manage the Priest Hole agricultural land (RM 137) and related recreation area by allocating land for uses of:
  - Wildlife food and cover plots.
  - Designated camping sites and trails.
  - Perennial vegetation restoration and berm removal.
- Maintain all unused agricultural land water rights in instream leases to attain instream flow goals (see Aquatics and Wild and Scenic Rivers Sections).
- Maintain a filter strip between all agricultural lands and active floodplains. The minimum width would be 14 feet beginning from the upper edge of the terrace/cut bank, outside of the active floodplain. This would be subject to appropriate noxious weed management treatments that may include tilling to establish desirable vegetation.
- Maintain agricultural lands in vegetation such that they are not prone to weed invasion or excess erosion.
- Specify all livestock grazing treatments of leased agricultural lands in the Special Use Permit.
- For the entire first year and through the second consecutive growing season following seedings and plantings, do not allow uses likely to threaten seeding success. (See Vegetation section for specific limitations on uses such as livestock grazing.) Uses that meet Objective AG1 above, such as grazing, could be authorized once an interdisciplinary team determines that the seedings and plantings are sufficient.
- Irrigation of agricultural fields would comply with the water withdrawal stipulations (see Aquatics). Parcels identified for disposal are not subject to irrigation shut-off stipulations.

## Guidelines

- When significant conflicts occur, resource values on public lands would be immediately protected and agricultural use will be cancelled within one year.
- For new proposals for partnerships, leases, or other uses of agricultural lands, the project would include a bond or agreement for the user to return the area to desired perennial species free of weeds and to remove structures.
- Minimize use of fertilizers and use riparian vegetation buffers to prevent fertilizer from entering streams and rivers.



## Hazardous Materials Management

### Management Common to All Alternatives

#### Objective HM1

All incidences of hazardous materials on public land are handled as outlined in the Prineville District's contingency plan of June 2007.

#### Actions

- Conduct internal and external (if appropriate) review of all actions related to land or minerals for compliance with federal and state regulations.
- Develop special stipulations as part of the permit or lease to safeguard human health, prevent environmental damage, and limit BLM liability.

## Alternative 1—No Action

### Soils

#### Objective S3

Maintain soil productivity and minimize erosion.

#### Actions

- Take corrective actions where practicable and feasible to resolve erosive conditions. Continue management with no specific limits or measures to reduce detrimental soil disturbance other than to minimize and use Best Management Practices.

### Air Quality

Alternative 1 would include direction described under Management Common to All Alternatives.

### Vegetation

#### Objective V5

Manage rangeland vegetation to achieve greater amounts of mid- or late seral conditions. Manage the majority of forestlands to produce timber.

#### Actions

- Manage commercial forestland (lands capable of producing 20 cubic feet of commercially valuable wood per acre per year) for the production of timber. Commercial tree species include pine, fir, spruce, Douglas-fir, and larch. Manage noncommercial forestlands (lands that do not have the viable species capable of producing 20 cubic feet of commercial grade wood) primarily to provide food and cover for wildlife and forage for cattle.
- Outside of Riparian Habitat Conservation Areas (RHCAs) (see Aquatics section and glossary), manage timber to prevent conditions that support insect and/or disease outbreaks. Management techniques include overstory removal and commercial or precommercial thinning.

#### Guidelines

- Design vegetation treatments for areas having irregular patterns, untreated patches, and other attributes, to provide for an optimum edge effect (see glossary) to support ecosystem health, wildlife, visual quality, and other resource objectives.
- Reclaim disturbed sites to as near as natural condition as possible.
- Manage timber using Allowable Sale Quantity (ASQ).



- Within 100–300 feet (distance is dependent on steepness of side slopes) of perennial streams and within 50 feet of ephemeral streams, timber removal would be allowed only to prevent the risk of loss of an entire stand due to insect infestation, disease, or wildland fire.
- In Segments 7 and 10 (North Fork and South Fork John Day River corridors, respectively), timber removal would take place only when necessary to reduce the risk of loss of an entire stand due to insect infestation, disease, wildland fire, or when public safety is of concern.

## Fuels

Alternative 1 would be the same as Management Common to All Alternatives.

## Fire

### Objective F4

Suppress all unplanned ignitions while allowing for the safety of the public and fire personnel, regardless of the level of risk.

## Aquatics

The guidelines in this section are required.

### Objective AQ14

Implement the interim PACFISH strategy, comprised of the following components: riparian goals, interim riparian management objectives (RMOs), riparian habitat conservation areas (RHCAs), Standards and Guidelines (Standards & Guidelines), key watersheds, watershed analysis, and watershed restoration.

- PACFISH does not propose any restoration or ground-disturbing actions.
- The goals of PACFISH establish an expectation of the characteristic of watersheds, water quality, riparian areas, and habitat needed to support anadromous fish.
- Existing PACFISH management direction provides guidance at the scale of the entire Interior Columbia Basin.
- Goals for aquatic habitat in RHCAs are focused on the value of anadromous fish. No anadromous fish strongholds are identified, and all watersheds with anadromous fish are key watersheds.
- Both the Two Rivers and John Day RMP include measures to protect aquatics with emphasis on anadromous fish, but lack restoration actions and objectives.
- PACFISH does not identify actions needed to attain restoration.

### Actions

- Use Riparian Management Objectives that provide numeric descriptions of good habitat for anadromous fish. The Riparian Management Objectives set targets for land managers to use in land-disturbing activities. They numerically describe anadromous fish habitat conditions for the entire Interior Columbia Basin.
- Use interim Riparian Habitat Conservation Areas, which are areas where PACFISH management applies. The RHCAs vary by anadromous fish presence and flow periodicity.
- Implement watershed analysis prior to modifying Riparian Management Objectives, Land Health Standards and Guidelines, or Riparian Habitat Conservation Areas.
- Implement aquatic-related actions in the John Day RMP, which prescribes construction of in-channel rock structures to provide habitat structures for anadromous fish.
- The Two Rivers RMP states that riparian areas will be managed to their full potential with at least 60% achieving vegetative potential.



### *Guidelines*

- Use PACFISH Standards and Guidelines, which identify restrictions on timber, roads, grazing, minerals, fire/fuels management, lands, riparian areas, watershed and habitat restoration, and fisheries and wildlife management actions necessary to halt degradation of anadromous fish habitat. The Standards and Guidelines are limited to halting degradation of existing anadromous fish habitat and are limited to a set of use types (timber, recreation, etc.).

## **Wildlife**

### **Objective W7**

Improve and maintain vegetative condition to benefit livestock and wildlife.

### *Actions*

- Manage upland vegetation through grazing management and range/wildlife habitat development to achieve maximum wildlife habitat diversity.
- Forage would be provided to meet ODFW management objective numbers for deer and elk. Additional forage may be allocated to livestock whenever present big game population objectives are exceeded.
- Habitat management plans would be written for selected areas of wildlife habitat, and specific wildlife objectives would be included in all activity plans.
- Seasonal restrictions would continue to be applied to mitigate impacts of human activities on important seasonal wildlife habitat.
- Areas where major vegetation manipulation or conversion occurs would be rested from livestock grazing for at least two growing seasons following treatment.
- Areas disturbed during project construction would be reseeded with a mixture of grasses, forbs, and shrubs to meet site-specific needs or habitat requirements.
- Use existing road systems and limit new permanent road entries to protect wildlife habitat.

### **Objective W8**

Protect habitat inhabited by, or potentially inhabited by, any listed or considered for listing species. See Appendix H for the list of Special Status Wildlife.

## **Wild Horses**

Alternative 1 would include Management Common to All Alternatives.

## **Lands with Wilderness Characteristics**

Alternative 1 does not provide management guidance for areas with wilderness characteristics outside of existing Wilderness and Wilderness Study Areas.

## **Cave Resources**

Alternative 1 would be the same as Management Common to All Alternatives.

## **Visual Resources**

### **Objective VR3**

Maintain the scenic quality of river canyons, open space landscapes, cultural landscapes, and other areas having high quality visual resources. Manage visual resource values in accordance with VRM class objectives (as described in detail under Management Common to All Alternatives, above).



### **Actions**

- Manage land according to VRM classifications shown on Map 8 and listed in Table 2-8.
- Continue to manage all BLM-managed lands on the North Fork John Day River as VRM Class III, including those lands acquired in 2002 under the Oregon Land Exchange Act of 2000.

## **Special Designations**

### **Wild and Scenic Rivers**

#### **Objective WSR3**

Protect and enhance the Outstandingly Remarkable Values (ORV) of existing Wild and Scenic Rivers (Map 9) and rivers determined to be administratively suitable for inclusion into the National Wild and Scenic River (WSR) System. Provide protection and enhancement of ORVs on eligible rivers until suitability determinations are made.

### **Actions**

- For the 37-mile segment of the North Fork John Day River determined eligible for inclusion in the WSR system, continue a tentative Recreation classification from Camas Creek to Mallory Creek, and a tentative Scenic classification from Mallory Creek to river mile 20.4. Provide interim protection of the scenic, recreation and fishery ORVs without a final determination of suitability. This applies only to public lands within 0.25 mile of both sides of the 37-mile eligible segment.

### **Wilderness and Wilderness Study Areas**

Alternative 1 would be the same as Management Common to All Alternatives.

### **Areas of Critical Environmental Concern**

#### **Objective AC12**

Spanish Gulch ACEC: Protect remnants of early mining activities including an old stamp mill, mineshafts, and several old cabins.

### **Actions**

- Continue to designate Spanish Gulch ACEC (333 acres).

### **Guidelines**

- Protect the area by limiting vehicle travel to existing roads and trails and requiring plans of operation from mining claimants before beginning any mining operations in the area.

### **Back Country Byways**

Alternative 1 would be the same as Management Common to All Alternatives.

### **Native American Uses**

Alternative 1 direction is described above under Management Common to All Alternatives.

### **Paleontological Resources**

Alternative 1 direction is described above under Management Common to All Alternatives.

### **Cultural Resources**

Alternative 1 direction is described above under Management Common to All Alternatives.



## Livestock Grazing

Alternative 1 includes direction listed above under Management Common to All Alternatives. Current direction for livestock grazing would be carried forward in all alternatives, with the exception of the actions noted below.

### Objective L4

Meet multiple use goals and objectives as stated in this and other sections of this RMP/EIS while considering resource conflicts, potential for allotment improvement, and agency funding constraints.

#### Actions

- Allow livestock grazing as shown for Alternative 1 in Appendix J.
- Do not authorize grazing on the nine allotments in the NFJDR that are predominantly acquired lands.

## Recreation Opportunities

### Objective R7

Provide diverse opportunities for dispersed motorized, non-motorized, and water-based recreation activities in Special and Extensive Recreation Management Areas (see glossary), and contribute to meeting recreational demand and quality visitor experiences.

#### Actions

- Continue to manage those lands not in the SRMA as an Extensive Recreation Management Area (ERMA).
  - Dispersed Recreation use on the North Fork John Day River, Rudio Mountain/Johnson Heights, Dixie Creek, and other public lands not designated as an SRMA would be subject to limited management. The only exception may be during big game hunting seasons when public trespass is highest during the year.
  - The BLM would continue to provide basic public information through maps of public lands and provide information regarding recreation opportunities and public safety. No facilities would be available away from the John Day River.
- Continue designations (as shown in Tables 2-12 and 2-23, and on Maps 12A-F) from the Records of Decisions for the Two Rivers, John Day, and Baker RMPs and subsequent Federal Register Notices, that identify:
  - 233,342 acres of BLM-administered lands as Open (see glossary for definitions of "Open," "Limited," and "Closed"), including all of Little Canyon Mountain area.
  - In these areas, allow motorized use off-highway and on designated or undesignated routes (cross country) without restriction. Open areas are located throughout the planning area, but are concentrated in the Rudio Mountains and public lands near John Day, Kimberly, and Monument.
  - 155,228 acres as Limited. Typically, OHV use in these areas must be on designated routes (usually primitive roads and trails), but restrictions may also be on season of use and/or time of day to prevent trail damage or disturbance to wildlife, non-motorized users, or nearby residents.
  - 67,332 acres as Closed to OHV use. In special management areas (e.g., Wilderness Study Areas, and Wild and Scenic Rivers), an area may be closed to OHV use to protect the values for which the areas were created.

### Objective R8

Provide opportunities for commercial, competitive, educational, and organized group recreational activities.

#### Actions

- Issue new Special Recreation Permits (SRPs) for commercial, competitive, or organized group use when they fall into one or more of the following categories:
  - Activities regulated by the John Day Wild and Scenic River Management Plan.
  - Renewal or transfer of existing Special Recreation Permits.
  - Activities or events that would not exceed seven consecutive days in length annually, and would not require preparation of an environmental assessment.



- Guide services for the holder of a John Day River bighorn sheep tag issued by the Oregon Department of Fish and Wildlife. These Special Recreation Permits would be temporary, and the term of the permit would not exceed the length of the hunt authorized by ODFW.
- Multi-district proposals where the authorized use area includes small portions of lands under management by the Prineville District, and the Special Recreation Permit would be issued by an adjacent BLM district.

## Travel Management

### Objective T5

Maintain the existing travel and transportation system to support the agency's mission, which is management of land and resource programs and their goals and objectives; provide for appropriate public and administrative access; and provide for a variety of recreational purposes.

#### Actions

- Manage an interim transportation system of 742 total miles of routes (see Table 2-23), including:
  - 572 miles of BLM routes open year-round,
  - 61 miles of BLM routes open seasonally, and
  - 109 miles under other jurisdictions open year-round.
- Of these 742 miles of existing routes, 250 miles are currently "landlocked" and inaccessible to the public unless permission for access is acquired from private landowners.
- Within the 742 miles, there are 475 miles that are unmaintained primitive routes (see Maps 12A-F).

## Energy and Mineral Resources

### Objective EM9

Provide opportunity for salable, locatable, and leasable minerals exploration, development, and production subject to existing regulations, standard requirements and stipulations to protect the environment. Respond to the needs of local, state, and federal agencies, and the public for salable mineral materials.

#### Actions

- All Federal mineral estate salable minerals would be available for exploration, development, and production subject to existing regulations, standard requirements and stipulations. Table 2-14 indicates areas closed, avoided, or available for mineral use under this alternative and as specified below:
  - Riparian Habitat Conservation Areas identified under PACFISH would be managed to meet PACFISH riparian management objectives (RMOs). Within Riparian Habitat Conservation Areas, prohibit sand and gravel extraction and require "No Surface Occupancy" for salable and leasable minerals, including geothermal. Negotiate to make changes in existing leases, permits, and rights-of-way.
  - The Horn Butte ACEC outside the Fourmile Tract would be designated as an avoidance area. If avoidance is not possible, the area is available with stipulations to protect curlew.

## Lands and Realty

In addition to Management Common to All Alternatives, the No Action Alternative would continue the two-zone land tenure system in the Baker RMP portion of the planning area:

- **Zone-1**—Lands with higher public values would be retained except:
  - Transfers to other federal agencies.
  - Transfers to State and local agencies [Recreation & Public Purpose (R&PP)] and other actions.
  - State exchanges.
  - Private exchanges to acquire other Z-1 lands that would enhance resource management or improve public service.
- **Zone-2**—Lands that are inefficient to manage because of their small size, are isolated, have no known resource values, or have low resource values would be available for disposal through sale or exchange.



Z-2 lands include:

- Two 40-acre parcels now contiguous with or surrounded by lands acquired as a result of the Oregon Land Exchange Act of 2000.

## Management of Newly Acquired Lands

Alternative 1 would include direction described above under Management Common to All Alternatives.

## Agricultural Land Management

### Objective AG3

Within all segments of the John Day River System (see Map 1), protect and enhance river values by managing agricultural lands with emphasis on wildlife habitat, cottonwood stock for reintroduction of hardwood riparian areas, and restoration of native vegetation.

- Keep approximately 60 acres of agricultural land in wildlife food and cover plots.

### Objective AG4

On agricultural lands outside the segments of the John Day River System (see Map 1) and managed under the Two Rivers Resource Management Plan, either sell, reclaim, permit or lease them for agricultural use. See Table 2-18 for a distribution of Two Rivers RMP management direction under Existing Management.

- Private appropriation of water from the John Day River as it relates to agricultural use on adjacent public lands would be coordinated through the Oregon Department of Fish and Wildlife, the Oregon Water Resources Board, and the Oregon State Parks and Recreation.
- Require the use of one specific seed mix when permanently converting agricultural fields around Sutton Mountain. (The BLM actively manages over 700 acres of the irrigation water rights under the John Day Wild and Scenic River Plan and the Sutton Mountain Coordinated Resource Management Plan [CRMP].) (See Table 2-18 for a distribution of existing agricultural lands.)

**Table 2-18. Distribution of Existing Management Direction for Agricultural Lands.**

Alternative 1 (Existing Management)		
Management Area	Management Action	Acres
Sutton Mountain CRMP	Permanent Conversion	200
	Agricultural Lease or Wildlife Food and Cover	120
All Wild and Scenic River Segments (See Map 1)	Agricultural Lease (after 2011)	0
	Wildlife Food and Cover	60
	Permanent Conversion	300
Remaining Plan Area	Agricultural Lease*	312
	Permanent Conversion*	208

\*Remaining plan area acres are pro-rated by percentage from the Two Rivers RMP acreages.

## Hazardous Materials Management

Alternative 1 would include direction described above under Management Common to All Alternatives.



## Alternatives 3, 4, and 5

### Management Common to Alternatives 3, 4, and 5

#### Livestock Grazing

##### Objective L5

Meet multiple use goals and objectives as stated in this and other sections of this PRMP/FEIS, while considering resource conflicts, potential for allotment improvement, and agency funding constraints.

##### Actions

- Allow livestock grazing as described in Appendix J.
- Modify livestock grazing to reduce potential conflicts between livestock grazing and other uses and resources using a "Grazing Decision Matrix." See Table 2-19 (Grazing Decision Matrix), Table 2-20 (Grazing Decision Matrix Factors), and the explanation below under Guidelines for Resolving Conflicts.

Regardless of which alternative is selected, the BLM would retain the authority and discretion to close allotments as necessary to address non-attainment of Land Health Standards and Guidelines or other resource objectives. (Note: Although the use of the Grazing Decision Matrix is Common to Alternatives 3, 4, and 5, some elements of the Matrix vary by alternative due to different weighting of some of the factors.)

- For the nine allotments in the North Fork John Day River (NFJDR) watershed that are predominately acquired lands managed according to Oregon Land Exchange Act of 2000 (OLEA) guidance, potentially leased AUMs have been calculated on a conservative basis to further protect values identified in OLEA.

See guidelines for "Resolving Conflicts" for an explanation of how this matrix is used.

**Table 2-19. Grazing Decision Matrix, given voluntary lease relinquishment.**

Degree of Conflict		Social and Ecological Rating								
		Low Ecological			Moderate Ecological			High Ecological		
		Low Social	Moderate Social	High Social	Low Social	Moderate Social	High Social	Low Social	Moderate Social	High Social
Demand Rating	Low Demand	Close	Close	Close	Close	Close	Close	Close	Close	Close
	Moderate Demand	Open	Open	Open	Open	Close	Close	Close	Close	Close
	High Demand	Open	Open	Open	Open	Open	Open <sup>1</sup>	Open	Open <sup>1</sup>	Open <sup>1</sup> , Close

<sup>1</sup> In these cases, the allotment would remain "Open" only if social and/or ecological conflicts could be mitigated.

##### Guidelines

- In accordance with BLM policy (Instruction Memorandum No. 2007-067), the John Day Basin PRMP/FEIS proposes use of a management tool, the Grazing Matrix (Table 2-19), which has been designed to identify and weigh resource demands and potential conflicts when grazing leases are voluntarily relinquished. As the policy states, grazing lease relinquishments are an increasing concern because: (1) lessees are requesting relinquishments (for personal or financial reasons) as a result of the expanding urban interface or other resource demands on public lands, and (2) there is some expectation that the public land forage associated with lease relinquishment would be devoted to uses other than livestock grazing. The policy indicates that if a livestock forage allocation is made available due to a relinquishment, it subsequently may be allocated to other grazing use applicants. However, before taking that action, the BLM "should document whether continued livestock use meets Land Health standards and if that continued use would be compatible with achieving land use plan management goals and objectives." The proposed Grazing Matrix, designed for the conditions and issues specific to the John Day Basin planning area, provides a means to consider resource conflicts, potential for allotment improvement, and agency funding



Table 2-20. Factors and Weights used in the Grazing Decision Matrix.

Factor	What Factor Measures	How factor is calculated	Weight of factor		
			Social	Demand	Eco.
Special Management Areas	% of allotment in WSR, ACEC, WSA, RNA and NEOALE	(# acres in SMAs/# acres in allotment) × 100 for each SMA {Eco = SMA - WSA acres}	0.5	0.12	0.25
Recreation	Potential for recreational use	[(# acres in allotment w/legal access)/(1,000 acres)] × 100	0.5	0.12	
Wait list	Rancher interest in allotment	Professional judgment; (range from 1 where lots of people want to graze it, to 100 where no one wants to graze it)		0.20	
Seasonal	Amount of seasonal restrictions on grazing	(#AUMs restricted to <90 days/#AUMs in allotment) × 100		0.12	
Forage	Relative amount of forage in allotment, compared to other allotments in the planning area	[1 - (#leased AUMs in allotment)/120] × 100 (120 is from 3 × median AUMs per allotment in the basin)		0.10	
Administrative Efficiency	Relative amount of forage and public land in an allotment	2: > 3 × median AUMs, and > median AUMs and > 90% PL. 1.5: > median AUMs and between 50 and 90% PL. 0.25: < median AUMs and < 50% PL. 1: all other allotments		Multiply sum by this factor.	
Wildlife	% of allotment containing important deer, sage-grouse, elk, WA ground squirrel habitat and waterfowl refuge	For each allotment, (% of acres deer winter range + % acres sage-grouse habitat + % acres elk winter range + % acres WA ground squirrel habitat + waterfowl refuge)		0.10	0.25
ESA fish	Existence of endangered fish species within the allotment	If stream within allotment provides spawning and rearing habitat and has a PFC rating of At Risk Static or worse and non-attainment is due to current livestock management # of miles of stream failing / # miles of stream in the allotment		0.12	0.25
Land Health Assessment – Demand	Poor grazing conditions for allotments failing assessment due to reasons other than grazing	Failing for reasons other than grazing = 75; all others = 0		0.12	
Land Health Assessment – Ecological	% of standards not met through Land Health assessment due to grazing	Number of failing standards attributable to grazing: 1 = 20, 2 = 40, 3 = 60, 4 = 80, 5 = 100			0.25

See guidelines on "Resolving Conflicts" for an explanation of how this matrix is used.



constraints while meeting the land use plan's multiple use goals and objectives. It should be noted that grazing lease relinquishments are a relatively uncommon occurrence in the John Day Basin planning area.

- When the BLM processes a voluntary relinquishment, any resource conflicts identified in the Grazing Matrix can be resolved by modifying uses (such as grazing or recreation), installing projects (cattle guards, fences), or taking other actions. If the lease is voluntarily relinquished, some options for forage allocation may include mitigating any conflicts and making the forage available for other applicants, or leaving the allotment vacant (not authorizing subsequent grazing applications). The term "Close" is used in the Matrix to refer to allotments where livestock grazing would not be authorized. Allotments with relinquished leases that are not authorized for grazing would not be permanently "closed" or unavailable. The RMP direction would allow for reauthorizing grazing use if ecological sensitivities, social issues, or grazing demands change through time. For all categories where conflicts are identified, the matrix provides for mitigating those conflicts to move an allotment into another category.
- The primary rating factors used in the Grazing Matrix are described in more detail below.

#### *Estimating Potential for Human/ Livestock Conflicts*

- In Alternatives 3, 4, and 5, the potential for this conflict is estimated using the following factors:
  1. cumulative percentages of allotment within special management areas (i.e., acres in a Wilderness Study Area, plus the acres in ACECs, plus the acres in a Wild and Scenic River, plus the acres in Research Natural Areas, plus the acres of NFJDR acquired lands divided by the acres of public land in allotment).
  2. potential for recreational use. Factor 2 (recreation) is scored as 100 if at least 1,000 acres are legally accessible to the general public, either by foot, car, or boat. Scores of less than 100 indicate percentage of acres less than 1,000 that are legally accessible. These two factors are weighted equally in determining this conflict score.

#### *Estimating Potential for Demand*

- In Alternatives 3, 4, and 5, the potential for demand is estimated using the following factors: (1) cumulative percentages of allotment within special management areas (see above), (2) potential for recreational use (see above), (3) waiting list for grazing preference, (4) amount of seasonal restrictions on grazing, (5) relative amount of forage (AUMs) in allotment, (6) administrative efficiency, (7) cumulative percentages of allotment containing important deer, elk, sage-grouse, Washington ground squirrel habitats and waterfowl refuge, (8) relative amount of anadromous fish habitat in unacceptable condition, and (9) land health.
- Factors 1 and 2 are calculated the same as described above for estimating potential for human/livestock conflict. Factor 3, waiting list, is based on professional judgment of Prineville District BLM Rangeland Management Specialists. Factor 4 is the percentage of authorized use (AUMs) restricted to 90 days or less. Factor 5 is the percent of public land forage in an allotment compared to three times the median public land forage for all allotments in the basin, capped at 100. Factor 6 gives a rating of 0.25, 1.0, 1.5, or 2.0 based on the amount of forage in the allotment and percent of public land. Factor 7 is the acres with important deer habitat, plus the acres with important elk habitat, plus the acres of important sage-grouse habitat, plus the acres of Washington ground squirrel habitat, plus the acres of lower John Day waterfowl refuge, divided by acres of public land in allotment. Factor 8 is the amount of anadromous fish spawning and rearing habitat with an unacceptable Proper Functioning Condition rating that is attributable to current livestock management relative to the amount basin-wide. Factor 9 is 75 for allotments that fail any Land Health standard due to causes other than grazing, and zero for all other allotments. Demand factors are weighted as follows: #1, #2, #4, #8, and #9 are each 12 percent of the total demand score; #3 is 20 percent; #5 and #7 are each 10 percent; and the sum is subtracted from 100 and multiplied by #6.

#### *Estimating Potential for Ecological Conflict*

- Potential ecological conflict is estimated using the following factors: (1) cumulative percentages of allotment within special management areas (acres in ACEC, plus the acres in WSR, plus the acres in RNA, divided by the acres of public land in allotment); (2) cumulative percentages of allotment containing important deer, elk, sage-grouse, and Washington ground squirrel habitats and waterfowl refuge; (3) relative amount of anadromous fish habitat in unacceptable condition; and (4) percent of the allotment failing to meet Standards for Land Health (20 points for each standard that fails and livestock



are a causal factor, 0 if meeting standards, or if livestock are not a causal factor in the failure, or if Land Health assessment has not been completed). The factors are weighted equally.

#### *Resolving Conflicts*

- Use a formula to estimate potential for conflict (between livestock and humans, and between livestock and natural resources) and potential demand (from ranchers) for specific allotments. Potential conflicts and demand are classified as low, moderate or high (described below). The BLM would set maximum allowable conflict and demand thresholds, and take actions as necessary to keep management costs and conflicts below those thresholds. The estimates would be used to prioritize work and to help make decisions about where conflicts might be high enough to warrant modifying or discontinuing grazing or other uses now or in the future.
- Based on the combination of conflict and demand, each allotment would be placed in a specific management category. The outcome for specific allotments is provided in Appendix J. The matrix outcomes vary by alternative, as described below.
- Outcomes of the matrix depend on voluntary lease relinquishment. Note that lease relinquishment is allowed in all alternatives; it is provided for in the grazing regulations (43 CFR) and cannot be changed at the RMP level. Lessees are under no obligation to relinquish their leases. If they wish to discontinue grazing, they have the option to relinquish their lease or transfer it to another qualified applicant.
- The matrix presented in this document is a snapshot in time illustrating the best information available. Administration of the recommendations of the Grazing Decision Matrix would be performed following an updating of the information to allow consideration of changes in Grazing Decision Matrix factors, management opportunities, and technologies that occur over time.

#### *North Fork John Day Acquired Lands*

- Any of the nine allotments managed according to OLEA guidance would have an allotment specific plan (for each allotment or group of allotments) developed that addresses native fish and wildlife and public recreation as directed by OLEA prior to being made available for grazing. Results of these plans may dictate either annual or long-term authorizations. Grazing preference for these vacant allotments would be made available to applicants based on existing regulations, with priority given to adjacent landowners, adjacent Forest Service lease holders, and applicants who have grazed within the allotments in the past.

## Alternative 3

The following resources and uses would be the same as the PRMP (Alternative 2): Soils, Air Quality, Vegetation, Fuels, Fire, Aquatics, Wildlife, Wild Horses, Lands with Wilderness Characteristics, Cave Resources, Visual Resources, Wilderness, Areas of Critical Environmental Concern, Back Country Byways, Native American Uses, Paleontological Resources, Cultural Resources, Energy and Mineral Resources, Lands and Realty, Agricultural Land Management, and Hazardous Materials Management.

The following resources and uses vary from the PRMP as indicated.

## Special Designations

### Wild and Scenic Rivers

#### **Objective WSR4**

Protect and enhance the Outstandingly Remarkable Values (ORV) of existing and newly designated Wild and Scenic Rivers (Map 9), and rivers determined to be administratively suitable for potential inclusion into the National Wild and Scenic River (WSR) System. Provide interim protection and enhancement of ORVs on eligible rivers until suitability determinations are made.

#### *Actions*

- For the 37-mile segment of the North Fork John Day River determined eligible for inclusion in the WSR system, recommend it as administratively suitable for potential designation by Congress as WSR. Classify the Mallory Creek to RM 20.4 segment (about 18 miles) as Scenic, and the Camas Creek to Mallory Creek segment (about 19 miles) as Recreational. The ORVs would be fishery, scenery, and recreation. The



suitability determination would apply to lands within 0.25 mile of both sides of the 37-mile segment, and determinations of suitability would follow the guidance in BLM manual 8351 section .33, pages 20-23.

## Livestock Grazing

This alternative employs the Grazing Matrix described in Management Common to Alternatives 3, 4, and 5, except for variations that affect grazing on the North Fork John Day River newly acquired lands.

### Objective L6

Meet multiple use goals and objectives as stated in this and other sections of this Final RMP/EIS, while considering resource conflicts, potential for allotment improvement, and agency funding constraints.

#### Actions

- Allow livestock grazing as shown for Alternative 3 in Appendix J.
- For this alternative, the nine allotments with North Fork John Day River acquired lands would be treated as being available for grazing.

#### Guidelines

These guidelines are in addition to those listed above under Management Common to All Action Alternatives.

##### *North Fork John Day River Acquired Lands*

- Alternative 3 applies the Grazing Decision Matrix assuming that the North Fork John Day River acquired lands do not have the "Special Management Area" status. Alternative 3 assumes that a 0.125-mile buffer on each side of currently occupied anadromous fish streams in NFJDR acquired lands would be excluded from livestock grazing. Actual implementation may vary due to use of existing fences, season of use, herding, natural barriers, or adjustments in allotment boundaries to exclude fish streams. Grazing preference for vacant allotments would be made available to applicants based on existing grazing regulations, with priority given to adjacent landowners, adjacent Forest Service permit holders, and applicants who have grazed within the allotments in the past.

## Recreation Opportunities

### Objective R9

Provide diverse opportunities for dispersed motorized, non-motorized, and water-based recreation activities in Special and Extensive Recreation Management Areas, and contribute to meeting recreational demand and quality visitor experiences.

#### Actions

Same as the PRMP (Alternative 2), except:

- Designate:
  - 4,571 acres as Open in an area north of Mitchell called the Golden Triangle, Rudio Mountain, and Little Canyon Mountain South Pit OHV play area.
  - 315,095 acres designated as Limited, including technical class II rock crawling areas and off designated routes, and Classes I and III permitted in Little Canyon Mountain North Pit (2 acres).



## Travel Management

### Objective T6

Provide public and administrative access in a manner that attains resource objectives and supports the agency's mission.

#### Actions

- Include 879 total miles in the interim travel management system, which includes BLM routes and State, County, and other agency routes across BLM lands (see Table 2-23). See Maps 14A-F for routes that would remain open for public use.
- Of the total miles in Alternative 3, about 864 miles are primitive routes usable only by high clearance or off-road vehicles. Over 250 miles of these interim routes currently cannot be accessed from existing public routes and would require the public to acquire private landowner permission to cross private roads to access public lands.
- Of the BLM controlled routes, 295 miles are open for use year-round and the other 475 miles are opened seasonally.
- Criteria for exclusion or selection:
  - If portions of a road limit the physical function of a stream, then that road is excluded from transportation system and an alternate route is identified. Routes identified for closure, rehabilitation or rerouting due to aquatic concerns are shown on Maps 14A-14F.
  - If a road has already been closed on an interim basis then the road is excluded from the interim transportation system.
  - Within the North Fork John Day area, all routes on public land would be available for public travel, except those routes identified for closure due to hydrologic concerns. Some of the routes that are now closed by existing management decisions would be made available for public travel.
- Interim and prescribed route densities under this alternative are shown in Table 2-21.

**Table 2-21. Interim and Prescribed Route Density Standards for Alternative 3.**

Travel Management Area	Interim Route Density (mi/mi <sup>2</sup> )*	Average Allowable Route Density (mi/mi <sup>2</sup> )**
Lower John Day	1.1	1.17
North Fork John Day	2.3	1.77
Rudio Mountain	1.4	1.81
South Fork John Day	1.6	1.65
Sutton Mountain	1.3	0.96
Upper John Day	3.5	1.48

\*Interim roads are identified on Maps 12A-F, 13A-F, and 14A-F. Interim route densities are not an objective or standard, but rather a way to represent the amount of roads and trails that were selected as interim for this alternative.

\*\* Prescribed route densities are displayed on Maps 12A-F, 13A-F, and 14A-F. Average allowable route density is an average across the analysis area based on prescribed route density standards (zero miles per square mile or 2 miles per square mile), and depicts the average if all lands are managed at the maximum allowable density. Analysis for prescribed route density standards was applied to BLM lands only.



## Alternative 4

The following resources and uses would be the same as the PRMP: Soils, Air Quality, Vegetation, Fuels, Fire, Aquatics, Wildlife, Wild Horses, Cave Resources, Visual Resources, Wilderness, Areas of Critical Environmental Concern, Back Country Byways, Native American Uses, Paleontological Resources, Cultural Resources, Lands and Realty, Agricultural Land Management, and Hazardous Materials Management.

The following resources and uses vary as indicated from the PRMP.

### Lands with Wilderness Characteristics

#### **Objective WC3**

Protect wilderness characteristics on all BLM lands with wilderness characteristics (35,457 acres), as shown on Map 7. See Objective WC1 for a list of protections.

### Special Designations

#### **Wild and Scenic Rivers**

##### **Objective WSR5**

Protect and enhance the Outstandingly Remarkable Values (ORV) of existing and newly designated Wild and Scenic Rivers (Map 9), and rivers determined to be administratively suitable for inclusion into the National Wild and Scenic River (WSR) System.

##### *Actions*

- The North Fork John Day River would not be recommended as suitable for potential designation by Congress as Wild and Scenic River. Manage unsuitable river segments in accordance with other RMP management objectives.

### Livestock Grazing

#### **Objective L7**

Meet multiple use goals and objectives as stated in this and other sections of this RMP/EIS, while considering resource conflicts, potential for allotment improvement, and agency funding constraints.

##### *Actions*

- Allow livestock grazing as shown for Alternative 4 in Appendix J.
- All nine allotments in the North Fork John Day River acquired lands would be closed to grazing.

##### *Guidelines*

The following guidelines are in addition to those listed above under "Management Common to All Action Alternatives."

##### *Resolving Conflicts*

- Alternative 4 uses the same Grazing Decision Matrix as Alternative 5, but applies a greater degree of sensitivity to conflict (that is, social and ecological values) while maintaining the same sensitivity to demand. For social and ecological values, Alternative 4 defines 'low' as values less than the 50th percentile, 'medium' as values between the 50th and 66th percentile, and 'high' as values above the 66th percentile.

##### *North Fork John Day Acquired Lands*

- For this alternative, the nine allotments are treated as having been relinquished, and the Grazing Decision Matrix results determine the proposed use.



## Recreation Opportunities

### Objective R10

Provide diverse opportunities for dispersed motorized, non-motorized, and water-based recreation activities in Special and Extensive Recreation Management Areas, and contribute to meeting recreational demand and quality visitor experiences.

#### Actions

Same as the PRMP (Alternative 2), except:

- Designate:
  - 2 acres as Open to OHV use within the South Pit area of Little Canyon Mountain.
  - 301,043 acres as Limited to designated roads and trails, including the Rudio Plateau area.
  - 155,325 acres as Closed, including the North Pit at Little Canyon Mountain and the Golden Triangle area.
- Motorized use at Little Canyon Mountain would be limited to the hours from 9 a.m. to 6 p.m. (Monday, Wednesday, Friday, and Saturday).

## Travel Management

Alternative 4 is the same as the PRMP (Alternative 2), except as modified below. Alternative 4 also includes Management Common to All Alternatives.

#### Actions

- Designate an interim travel management system containing 333 miles of routes open for public use, as shown on Maps 13A-F and listed in Table 2-23. This total includes 109 miles of routes that cross BLM-managed land but are managed by other agencies, the state, or counties. Of the 224 miles that are managed by the BLM:
  - Maintain as open year-round 86 miles of gravel surfaced and natural improved surface roads.
  - Maintain as open seasonally 138 miles of primitive roads.
- Interim and prescribed route densities under this alternative are shown in Table 2-22.
- Manage as closed (do not include as part of the interim transportation system) 409 miles of routes. Of these 409 miles:
  - 241 miles are short segments surrounded by private land with no public access rights.
  - 168 miles are either duplicate routes providing access between the same starting points and the same ending points, or they consist of short, ill-defined, user-created routes, utility routes, short dead end routes, or routes leading to private land but not currently authorized as rights-of-way.

**Table 2-22. Interim and Prescribed Route Density Standards for Alternative 4.**

Travel Management Area	Interim Route Density (mi/mi <sup>2</sup> )*	Average Allowable Route Density (mi/mi <sup>2</sup> )**
Lower John Day	0.4	1.17
North Fork John Day	0.7	1.77
Rudio Mountain	0.4	1.63
South Fork John Day	0.6	1.39
Sutton Mountain	1.5	0.96
Upper John Day	0.4	1.48

\*Interim roads are identified on Maps 12A-F, 13A-F, and 14A-F. Interim route densities are not an objective or standard, but rather a way to represent the amount of roads and trails that were selected as interim for this alternative.

\*\* Prescribed route densities are displayed on Maps 12A-F, 13A-F, and 14A-F. Average allowable route density is an average across the analysis area based on prescribed route density standards (zero miles per square mile or 2 miles per square mile), and depicts the average if all lands are managed at the maximum allowable density. Analysis for prescribed route density standards was applied to BLM lands only.



## Energy and Mineral Resources

Alternative 4 is the same as the PRMP (Alternative 2), except as modified below. Alternative 4 also includes Management Common to All Alternatives.

- Avoidance and No Surface Occupancy restrictions defined in Table 2-14 apply to all acres of areas identified for protection of wilderness characteristics.

## Alternative 5

The following resources and uses would be the same as the PRMP: Soils, Air Quality, Vegetation, Fuels, Fire, Aquatics, Wildlife, Wild Horses, Lands with Wilderness Characteristics, Cave Resources, Visual Resources, Wild and Scenic Rivers, Wilderness, Areas of Critical Environmental Concern, Back Country Byways, Native American Uses, Paleontological Resources, Cultural Resources, Energy and Mineral Resources, Lands and Realty, Agricultural Land Management, and Hazardous Materials Management.

The following resources and uses vary as indicated from the PRMP.

## Livestock Grazing

### Objective L8

Meet multiple use goals and objectives as stated in this and other sections of this RMP/EIS, while considering resource conflicts, potential for allotment improvement, and agency funding constraints.

#### Actions

- Allow livestock grazing as shown for Alternative 5 in Appendix J.
- The nine allotments containing acquired lands in the North Fork John Day River would be "Close."

#### Guidelines

These guidelines are in addition to those listed above under "Management Common to All Action Alternatives."

#### *Resolving Conflicts*

- Alternative 5 applies the Grazing Decision Matrix to all allotments in the John Day Basin, and treats North Fork John Day River acquired lands as a "Special Management Area" similar in status to Wilderness Study Areas, Wild and Scenic Rivers, Research Natural Areas, and Areas of Critical Environmental Concern. In this alternative, "low" conflict/demand is defined as values less than the 50th percentile, "medium" is defined as values between 50th and 95th percentile, and "high" is defined as values above the 95th percentile.

#### *North Fork John Day Acquired Lands*

- For Alternative 5, the nine allotments are treated as having been relinquished, and the Grazing Decision Matrix results determine the proposed use.

## Recreation Opportunities

### Objective R11

Provide diverse opportunities for dispersed motorized, non-motorized, and water-based recreation activities in Special and Extensive Recreation Management Areas, and contribute to meeting recreational demand and quality visitor experiences.



### Actions

- Designate:
  - 315,020 acres as Limited to designated routes and trails, including 3,971 acres on the Rudio Plateau, and a 602-acre area north of Mitchell called the Golden Triangle.
  - 141,350 acres as Closed, including the Little Canyon Mountain SRMA.
  - All trails on Little Canyon Mountain would be limited to non-motorized use only.
  - All other actions are the same as for Alternative 2.

## Travel Management

Alternative 5 is the same as Alternative 4, except as modified below. Alternative 5 also includes Management Common to All Alternatives.

- With the exception of the county road and Forest Service trailhead road, all other roads on BLM lands in the Little Canyon Mountain Area near John Day are closed to all motorized vehicles unless administratively approved. Types and amounts of vehicle access will be defined in the administrative access mechanism such as a right-of-way agreement.
- Prescribed road densities are the same as those described in Alternative 2 with the exception: Rudio Mountain and Little Canyon Mountain OHV Open designations are not included in Alternative 5. Rudio Mountain prescribed road density is 2 miles per square mile. Little Canyon Mountain prescribed road density would be 2 miles per square mile, with the exception that outside of the county and Forest Service access roads, allowable roads and trails would be for administrative use or non-motorized use, respectively.



# Summary of Alternative Outcomes

The following table summarizes the anticipated outcomes of the alternatives described in this chapter. Yellow highlights indicate corrections made based on inaccuracies in the Draft EIS. Pink highlights indicate acreage changes based on alternative adjustments from the Draft EIS to the Final EIS.

**Notes:** The Transportation outcome for "Total Interim Routes" for the PRMP (Alternative 2) includes only those roads that are necessary for administration of BLM lands and access for recreation. It does not include road segments that are not accessible by the public due to a lack of public rights-of-way across private lands, user-created and unmaintained or other barriers. Grazing outcomes for Alternative 1 do not include most lands in the North Fork John Day River area. All grazing outcomes depend on lessees voluntarily relinquishing their lease [i.e., If Lease Relinquished (ILR)].

**Table 2-23. Summary of Alternative Outcomes.** (See glossary for definitions.)

Land Allocation	Stratification	Units	Alternative				
			1	2	3	4	5
Vegetation	Forest Product Availability	Acres	35,390	74,726		74,726	74,726
	Juniper Product Availability	Acres	207,583	195,208		185,907	195,208
	Agriculture (Lease or Wildlife Food and Cover)	Acres	492	Up to 400			
Fire	Wildland Urban Interface	Acres	22,304	85,391			
	Suppression Zone	Acres	0	22,304			
	AR with Fire for Resource Benefit Potential	Acres	0	434,306			
Appropriate Response (AR)							
Water Rights and Agricultural Land Management	Irrigation and Wildlife	cfs	5	0 - 10			
	Instream Leases	cfs	11.5	12 - 17			
	No Management Direction	cfs	5.5	0			
	Mining	cfs	12	0			
	Ag Land Disposed	cfs	2	3			
Cubic Feet Per Second (cfs)							
Riparian Areas	PAC Fish	Acres	51,260	N/A			
	ACS	Acres	N/A	139,673			



**Table 2-23. Summary of Alternative Outcomes.** (See glossary for definitions.)

Land Allocation	Stratification	Units	Alternative				
			1	2	3	4	5
Wildlife	Elk Winter Range	Acres	42,296	209,044			
	Elk Winter Critical	Acres	0	109,887			
	Deer Winter Range	Acres	303,393	0			
	Deer Winter Range Crucial	Acres	0	255,038			
	Bighorn Sheep Occupied	Acres	5,698	70,449			
	Bighorn Sheep Potential	Acres	0	71,390			
	Antelope Year Round	Acres	81	1,636			
	Antelope Winter Range	Acres	638	1,070			
	Seasonal Closure	Acres	86,793	332,559	331,961	336,291	
	Seasonal Closure Optional	Acres	23,516	0			
Areas protected for their wilderness characteristics		Acres	0	19,442		35,457	19,442
Visual Quality  Visual Resource Management (VRM)	VRM Class I	Acres	95,893				
	VRM Class II	Acres	103,645	160,199		164,574	160,199
	VRM Class III	Acres	174,989	150,994		150,972	150,994
	VRM Class IV	Acres	82,306	49,285		44,484	49,285
Wilderness (See Map 9A)		Acres	6,411 (9,250 acres with completion of legislated land exchanges)				
Wilderness Study Area		Acres	89,428				
Wild and Scenic River  Miles are across all ownerships R = Recreation S = Scenic W = Wild	Designated	Miles	R - 211		S - 38	W - 32	
	Protect as Eligible	Miles	R - 19 S - 18	S - 37	R - 19 S - 18	0	S - 37
	Recommended as Suitable		Defer	Yes	Yes	No	Yes
ACEC	Designated	Acres	6,332	68,406			
	RNA	Acres	0	6,639			
	Contingent on WSA release by Congress	Acres	0	40,295			



**Table 2-23. Summary of Alternative Outcomes.** (See glossary for definitions.)

Land Allocation	Stratification	Units	Alternative				
			1	2	3	4	5
<b>Grazing</b> • Alt. 1 acres do not include some N. Fork John Day River lands. All actions in Alts. 2-5 depend on lessee voluntarily relinquishing their lease. • Results by allotment are contained in Appendix J.	Open	Acres	395,495	56,382	188,326	182,845	186,711
	Close	Acres	0	385,692	253,748	259,229	255,363
<b>Recreation</b>	Special Recreation Management Areas	Acres	119,052	294,580			
	Extensive Recreation Management Areas	Acres	337,559	162,252			
	Primitive - Setting	Acres	0	104,954			
	Back Country - Setting	Acres	0	29,500		37,511	29,500
	Middle Country - Setting	Acres	0	155,011		147,000	155,011
	Front Country - Setting	Acres	0	1,949			
	Rural - Setting	Acres	0	2,617			
<b>OHV</b>	Open - Total	Acres	234,272	3,971	4,571	2	0
	Limited - Total	Acres	155,228	313,668	313,067	301,043	315,020
	▪ Class II only	Acres	0	2	0	0	0
	▪ Class I and III only	Acres	0	0	2	0	0
	▪ Limited to Designated Routes	Acres	155,288	315,691	313,065	301,043	315,020
	Closed	Acres	67,332	138,732	138,732	155,325	141,350



**Table 2-23. Summary of Alternative Outcomes.** (See glossary for definitions.)

Land Allocation	Stratification	Units	Alternative				
			1	2	3	4	5
<b>Transportation</b> (Interim Routes are part of the Interim Transportation Plan until a detailed Transportation Management Plan is Developed)  * Includes opening 137 miles of closed routes in the North Fork.  ** Approximate values - Landlocked implies No Access without Private Landowner Permission.  ***Duplicate/Short/ Ill Defined roads have limited value toward meeting user demand in a transportation system, usually user created.	Total Designated Interim Routes	Miles	742	333	879*	333	330
	Open Year Round - Interim Routes	Miles	681	195	404	195	195
	BLM Open Year Round	Miles	572	86	295	86	86
	Other Ownership Open Year Round	Miles	109	109	109	109	109
	Open (04/16 through 11/30) Interim Routes	Miles	61	138	475	138	138
	Landlocked Routes - Designated Interim**	Miles	250	9	250	9	9
	Total Routes Not Designated as Interim (Closed routes in WSA and other areas are not included)	Miles	0	409	0	409	409
	Landlocked Routes - Not Designated Interim**	Miles	0	241	0	241	241
	Duplicate/Short/ Ill Defined Routes***	Miles	0	168	0	168	168
	Existing Open Roads to be Permanently Closed	Miles	0	36			
	Proposed Routes to be Constructed	Miles	0	5			
	Proposed Road Easements	Miles	0	46			
	Back Country Byway	Miles	0	42			
<b>Lands without Legal Public Access</b>		Acres	87,633				
<b>Road Density Standard</b> (Allowable Limit)	0 mi/mi <sup>2</sup>	Acres	95,755	139,063	139,063	155,684	141,680
	1.1 mi/mi <sup>2</sup> or less	Acres	0	5,586	0	5,586	5,586
	1.5 mi/mi <sup>2</sup> or less	Acres	0	7,628	0	7,628	7,628
	2 mi/mi <sup>2</sup> or less	Acres	0	300,074	312,686	287,422	301,428
	No Limit	Acres	360,758	3,971	4,574	2	0
<b>Salable Minerals</b> (Acres are for Mapped Units- See Text for allocations)	Available	Acres	80,306	21,404	21,404	20,469	21,404
	Avoidance	Acres	0	31,130	31,130	27,743	31,130
	Avoidance with NSO	Acres	11,107	20,399	20,399	19,498	20,399
	Closed	Acres	67,124	85,604	85,604	90,827	85,604



**Table 2-23. Summary of Alternative Outcomes.** (See glossary for definitions.)

Land Allocation	Stratification	Units	Alternative				
			1	2	3	4	5
<b>Locatable Minerals</b> (Acres are for Mapped Units—See Text for allocations)	Available	Acres	80,306	21,404	21,404	20,469	21,404
	Avoidance	Acres	41,115	82,230	82,230	83,165	82,230
	Closed	Acres	37,116	54,903	54,903	54,903	54,903
<b>Leasable (Oil and Gas)</b> (Acres are for Mapped Units—See Text for allocations)	Available	Acres	230,583	72,234	72,234	68,919	72,234
	Avoidance	Acres	4,324	91,720	91,720	84,969	91,720
	Avoidance with NSO	Acres	98,842	169,775	169,775	179,841	169,775
	Closed	Acres	91,527	91,547	91,547	91,547	91,547
<b>BLM Salable and Locatable Minerals Rights (Non-BLM Surface Owner)</b>	Private	Acres	99,891				
	State	Acres	6,336				
	Federal (non-BLM)	Acres	1,653,564				
<b>Leasable (Oil and Gas) (Non-BLM Surface Owner)</b>	Private	Acres	443,990				
	State	Acres	10,107				
	Federal (non-BLM)	Acres	1,798,554				
<b>Lands</b> *Acquisition via willing exchange or purchase. **Or similar legislation.	Z1 - Retain	Acres	222,182	354,887	357,317	357,317	357,317
	Z2 - Retain or Exchange	Acres	193,769	33,253	30,822	30,877	30,822
	Z3 - Dispose	Acres	40,444	68,192	68,192	68,137	68,192
	Acquisition*	Acres	4,036	888,405			
	FLTFA Eligible**	Acres	36,956	18,429			
<b>Rights-of-Way, Communication Sites, and Renewable Energy Development</b> (Acres are for Mapped Units—See Text for allocations)	Available	Acres	234,665	73,186	73,186	70,818	73,186
	Avoidance	Acres	40,829	108,868	108,868	99,686	108,868
	Exclusion	Acres	0	62,243	62,243	59,663	62,243
	Withdrawn	Acres	181,336	212,532	212,532	226,663	212,532



# Alternatives Considered But Not Further Analyzed

There is an infinite number of alternatives that could be considered in revising the John Day Basin Resource Management Plans. The following alternatives were considered, but not carried forward for detailed analysis because: (1) they would not fulfill requirements of the Federal Land Policy and Management Act (FLPMA) or other existing laws or regulations, (2) they did not meet the purpose and need, (3) they were already part of an existing plan, policy, or administrative function, or (4) they were not within the limits of the planning criteria. The FLPMA requires that the BLM manage public lands and resources in accordance with the principles of multiple use and sustained yield, including recognizing the Nation's needs for domestic sources of minerals, food, timber, and fiber. Moreover, the BLM is required by law to recognize existing valid rights on public lands and manage public lands in accordance with existing laws.

Past management experience, laws, and regulations guiding management, as well as public input, were all used by the Interdisciplinary Team in designing the alternatives considered in detail. Many of the thoughts and ideas suggested by people, but not analyzed in detail, were used to develop those alternatives that were considered in detail.

## North Fork

The BLM was asked to consider designating the North Fork of the John Day acquired lands as an Area of Critical Environmental Concern (ACEC). While Congressional language in the 2000 Oregon Land Exchange Act identified unique values of the North Fork, it did not indicate that a designation of ACEC was necessary to protect these values. Alternatives developed provide a range of protections for these values through limits on management allocations and allowable uses. It was determined that adding the land use designation of an ACEC was not necessary as it would not protect these resources any more than an alternative already analyzed. Protection of visual quality was determined to be one resource that would be afforded extra protection from an ACEC designation and has been analyzed for portions of the North Fork in the action alternatives.

## Travel Management

The ID Team considered methods to attain resource objectives using seasonal road closures rather than by limiting road densities. This alternative was not carried forward because it would not fully address objectives for wildlife, hydrology, soils, fisheries, and recreation throughout the year. An alternative that would prescribe road densities at the current level was also considered. This alternative was determined to not meet the purpose and need in that it would not allow for the creation of additional roads or trails in areas where additional public access has been identified as a desired outcome nor would it meet the wildlife, hydrology, soils, or fisheries objectives.

## Agricultural Lands

The BLM was asked to consider an alternative that would allow the production of commodities (alfalfa hay) on wildlife food and cover plots to be used to benefit wintering wildlife in eastern Oregon. This proposal was not analyzed because it did not meet resource objectives for the John Day Wild and Scenic River. Water from the John Day River used to irrigate wildlife food and cover crops was determined to be necessary to provide benefits to the Outstandingly Remarkable wildlife values within the Wild and Scenic river.

## Energy Corridors

Public comment to the Draft EIS requested that the BLM consider providing additional areas for energy corridors. This alternative was not analyzed for the following reason: Analysis in the 2009 Western-wide Energy Corridor EIS did not identify additional corridor needs in the planning area and thus this was not identified as a planning



issue. Additional corridors would also be inconsistent with the management objectives to protect the high sensitivity of visual character on the majority of BLM lands within the planning area.

## Aquatics

The BLM initially considered delineating areas allocated for attainment of Aquatic Conservation System objectives on a site-specific basis by an ID Team (rather than specifying a set width in the RMP). Informal consultation with NMFS and USFWS resulted in the BLM using the widths now displayed in the Aquatic section of Chapter 2. The NMFS rationale for this change was (1) to satisfy NMFS need to remain “risk-averse,” (2) certainty, and (3) convenience. The BLM believes that the set but expandable widths will use ID Teams more efficiently in the field by focusing field discussions on management actions required to meet resource objectives near stream channels, floodplains, and lentic areas. The ID Team discussions of “where the line should be” would take time away from discussions on Best Management Practices and management actions required to meet resource objectives. In the end, resource objectives would be achieved more quickly by focusing limited BLM labor on designing appropriate management actions.

The BLM also considered revoking Water Power Site (dams) withdrawals along main stem rivers in the planning area. However, this alternative was dropped from further consideration because the reservations do not affect BLM’s management of the river at this time.

## Lands with Wilderness Characteristics

The BLM was requested to consider a proposal to identify 13 new or additions to existing Wilderness Study Areas.

This proposal was considered in detail during the BLM’s wilderness characteristics inventory; however, an alternative to manage the proposed areas as Wilderness Study Areas was not analyzed in detail for the following reasons:

1. The BLM has the authority to identify lands with wilderness characteristics and the discretion to manage those lands for protection of those characteristics, but no longer has the authority to identify new Wilderness Study Areas under Section 603 of FLPMA, 43 U.S.C. § 1782(a).
2. BLM’s inventory concluded that wilderness characteristics did not exist on all of the proposed lands.
3. Much of the land identified in the proposal is managed under the authority of the USDA Forest Service and therefore outside of the BLM’s decision space.

The BLM inventoried all BLM lands (almost 370,000 acres) outside of existing Wilderness and Wilderness Study Areas (including all BLM lands within the above proposal) for wilderness characteristics. The BLM found that 35,457 acres had wilderness characteristics. The 35,457 acres are included for protection in at least one of the action alternatives. Several of the lands identified as having wilderness characteristics and proposed by the BLM for protection in the action alternatives are within the areas the BLM was requested to consider.

This EIS eliminates from detailed consideration for protection of wilderness characteristics those lands that do not currently meet the requisite criteria to qualify as lands with wilderness characteristics. As a result of planning area-wide management, it is possible that in the future some lands may develop wilderness characteristics. Should substantial changes occur, such as a land exchange, that result in new blocks of land meeting all wilderness characteristic criteria, decisions on how those lands would be managed will be made at that time and can be incorporated into the RMP with the appropriate land use plan amendment and corresponding NEPA compliance.

## OHV Designations

Alternatives were considered to phase-in changes in OHV designations from Open to Limited or Closed. One option considered was to leave certain travel management areas predominantly Open for several years or until sufficient trails were created. Other options considered were to phase-in, by Recreation Management Zone, the target areas with the highest existing road density for transition first, or to phase-in as final transportation plans are developed. None of these options were analyzed further because the ultimate effects would be substantially



similar to those under the existing alternatives. Phasing in changes would also increase implementation complexity and the potential for public confusion. Additionally, phasing in changes would not meet resource objectives in that the majority of BLM land in the planning area has steep slopes and sensitive soils where, although currently designated as Open, OHV use should not be occurring due to resource concerns. Also, part of the purpose and need is to update designations to be consistent with national direction, which is to go primarily to Limited.

The No Action alternative (Alternative 1) is based on existing land use plan direction. The emergency closure currently in place on Little Canyon Mountain was not considered to be the No Action alternative because it was not part of a land use plan decision. The proposed actions contain a full range of OHV designations on Little Canyon Mountain, including those that exist in the emergency closure, making it unnecessary to analyze this alternative.

## Lands

Some public comments suggested that the BLM dispose of all public land. This is not consistent with the Federal Land Policy and Management Act (FLPMA) and therefore was dropped from further consideration.

The City of Mitchell requested that the BLM consider alternatives that would allow the creation of infrastructure and community expansion on surrounding BLM lands. The ID Team considered the options of designating certain lands as Community Expansion and/or changing the land tenure zone to Z-3. Alternatives with these components were not considered because at this time there are insufficient project details to identify specific lands. Additionally, other regulatory acts such as the Recreation and Public Purposes Act can be considered under all of the alternatives.

## Livestock Grazing

Some public comments suggested that this planning effort consider eliminating livestock grazing from the planning area. An alternative that proposes to close the entire planning area to grazing would not meet the purposes and need of this RMP/Final EIS. The National Environmental Policy Act (NEPA) requires that agencies study, develop, and describe appropriate alternatives to recommended courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources. During this land use planning effort, no issues or conflicts were identified that require the complete elimination of grazing within the planning area for their resolution. Where appropriate, closures and adjustments to livestock use were incorporated into the alternatives on an allotment or area basis. Since the BLM has considerable discretion, through its grazing regulations, to determine and adjust stocking levels, seasons-of-use, and grazing management activities, and to allocate forage to uses of the public lands in RMPs, the analysis of an alternative to entirely eliminate grazing is not needed.

The Federal Land Policy and Management Act (FLPMA) requires that public lands be managed on a "multiple use and sustained yield basis" (FLPMA Sec. 302[a] and Sec. 102[7]) and includes livestock grazing as a principal or major use of public lands. Although multiple use does not require that all lands be used for livestock grazing, complete removal of livestock grazing on the entire planning area would be arbitrary and would not meet the principle of multiple use and sustained yield. Future site-specific reductions in livestock grazing can be made as appropriate; deciding whether to continue or eliminate livestock grazing generally should not require a land use plan amendment, depending on the type and extent of changes (IM OR-2008-069). Alternatives that do not allow any livestock grazing have been analyzed for the majority of the planning area public lands in the Two Rivers Resource Management Plan (1986), Sutton Mountain Coordinated Resource Management Plan (1996), and John Day River Management Plan (2001). This plan does analyze a no grazing alternative for the recently acquired lands of the North Fork John Day River. In addition, this plan provides for the potential relinquishment of grazing allotments containing 82% of the forage in the planning area.

Similarly, commenters proposed that the BLM protect sensitive resources by not allowing livestock grazing in riparian areas. Existing guidance already allows for the modification or removal of livestock to protect sensitive resources. However, this FEIS does assess an alternative (Alternative 3) that excludes grazing from currently occupied anadromous fish streams on acquired lands along the North Fork John Day River.



Some commenters suggested that there should be alternatives that allocate different levels of AUMs on an allotment-specific basis. At the RMP level, the BLM is required to identify the amount of forage available for livestock on an area-wide basis. The allocation of allotment-specific livestock forage amounts is a site-specific decision generally deferred until after the RMP is completed.

Ecosystem management precepts that have guided BLM management philosophy for at least the past decade begin with the capabilities of the land to provide for multiple resource benefits, with output levels determined at the end by an objective-driven process. Because of this, specific AUM levels in an allotment are better determined through allotment management plans and implementation of grazing standards designed to achieve objectives, meet Land Health Standards and Guidelines, conform to site-specific planning, and adjust to the intensity and success of lease management. The existing alternatives and administrative regulations adequately cover variations that may occur later at the site-specific level.

With the exception of a grazing relinquishment process, concerns identified during scoping were previously addressed by actions taken in accord with the Record of Decision for the John Day River Plan (2001). Grazing management was identified as a planning issue for the John Day River Plan and a range of alternatives consistent with the BLM Land Use Planning Handbook were addressed. Monitoring of these actions suggests improving resource conditions as specified in Chapter 3 Aquatics section.

Since 2001, Rangeland Standards & Guidelines assessments have been completed on 119 allotments totaling 279,302 acres, which equates to 45% and 65% respectively of the total in the planning area. Of the completed assessments, 42% of allotments and 29% of acres are meeting all standards and 58% of allotments and 71% of acres are failing one standard or more. Of allotments that failed, 14% (35,360 acres) had existing grazing management practices or levels of grazing use on public lands as a causal factor. Grazing management adjustments have been implemented on all except 5,947 acres, and efforts are underway to address these remaining acres. The remaining 86% (163,471 acres) of allotments not meeting standards failed due to increasing juniper stands, noxious weed infestations, impacts associated with past uses, or other reasons.

A prioritization process was developed to direct assessments to allotments with the highest potential for resource and grazing management concerns first. Overall, it appears livestock are a primary contributor in a minority of the grazing allotments not meeting the Standards for Land Health. Actions to address failure to meet a Standard can include change in season of use, forage allocation levels, grazing intensity, or discontinuation of grazing in all or a portion of the allotment.

Livestock grazing is and has been an important use of the public lands in the planning area for many years and is a continuing government program. Although the Council on Environmental Quality (CEQ) guidelines for compliance with NEPA require that agencies analyze the "No Action Alternative" in all Environmental Impact Statements (EISs), for the purposes of this NEPA analysis, the "No Action Alternative" is to continue the status quo which includes livestock grazing (CEQ Forty Most Asked Questions, Question 3). For this reason and those stated above, a no grazing alternative for the entire planning area has been dismissed from further consideration in this land use plan.

## **Minerals**

Initially, the ID Team identified many areas for closure to mineral disposal; rights-of-way; renewable energy; and locatable, salable, and leasable minerals. These areas include BLM-managed land between 1,320 and 300 feet of stream channels, Public Water Reserves (107), and areas where wilderness character would be protected. Internal BLM Oregon/Washington State Office review of this alternative indicated that mining could still occur in these areas through avoidance, the use of stipulations, and Best Management Practices. The BLM also considered an alternative that would result in the closure of all BLM lands to mineral entry, but this was not consistent with FLPMA.

The BLM considered using an ACEC designation and closing to mineral entry all critical habitats of ESA-listed fish and plants in the plan area. Upon further review, it was decided that designating these as "avoidance" areas with special stipulations designed to protect ESA-listed fish and plants would achieve the same results. The use of ACECs for this critical habitat was dropped from further review.



# Summary of Effects

**Table 2-24. Summary of Key Effects by Resource in the John Day River Basin Plan Area.**  
(Example indicators are also provided. See more detailed discussions in Chapter 4 for additional information).

Resource (Example indicators)	Alternative 1 No Action	Alternative 2 (PRMP)	Alternative 3	Alternative 4	Alternative 5
<b>SOILS</b> (Erosion)	Second highest soil erosion from roads and OHV use. Least favorable for soil function.	Lowest soil erosion from roads and OHV use.	Highest soil erosion from roads and OHV use.	Lowest soil erosion from roads and OHV use. Most favorable for soil function.	
<b>VEGETATION</b> (Difference between current ecosystem conditions and the Acceptable Range of Variability (ARV))	Addresses 61% of rangeland and 35% of forestland health treatment needs over 30 years. Relatively higher risk of uncharacteristic wildland fire, insects and disease. Increases surplus of early-seral, and reduces surplus of late-seral rangeland communities. Timber Management Units (TMU) covering 135,719 acres would contain some large trees but very few stands dominated by them. Individuals and patches of old growth juniper trees would be left within juniper cuts. The lack of designated areas for AR (including fire to meet resource objectives) limits natural fire starts and achievement of vegetation objectives (FRCC1). Increases risk of noxious weed spread with 234,272 acres open to OHV use.	Addresses 92% of rangeland and 82% of forestland health treatment needs over 30 years. Moves vegetation toward an Acceptable Range of Variability (ARV), where the types, intensities and response of vegetation to natural disturbance are within acceptable limits. Vegetative treatments would address the greatest number of resource needs through integrated prioritization. Areas available for forest or juniper products (273,577 acres) would emphasize forest health. Active forest management both within and outside of areas currently identified TMUs would maintain forest densities that meet commercial, noncommercial, landscape health and other resource objectives. A percentage of all rangeland areas with a juniper component would move toward, or be retained in, old growth juniper conditions. Removes approximately 19,422 acres (Alternatives 2, 3, and 5) and 35,457 acres (Alternative 4) from forest and juniper product availability by identifying these areas to be managed for protection of wilderness characteristics. Utilization of Appropriate Response to move vegetation conditions toward FRCC1 would also reduce the need to implement other treatments to meet ARV objectives. Up to 4,571 acres are open to cross-country, off-road motorized use, depending on alternative, reducing risk of noxious weed spread. Less disturbance of special status plants than Alternative 1.			



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(Example indicators are also provided. See more detailed discussions in Chapter 4 for additional information).

Resource (Example indicators)	Alternative 1 No Action	Alternative 2 (PRMP)	Alternative 3	Alternative 4	Alternative 5
<b>FIRE and FUELS</b> (Wildland risk to communities at the wildland urban interface, ecosystem and habitat condition)	By 2037, 59% of the plan area would be in relatively low fire hazard conditions (1- to 3-foot flame lengths) where ground suppression forces can operate safely. Through suppression of all wildland fires, fuels would continue to build up and possibly lead to larger and more severe fires.	By 2037, 69% of the plan area would be in relatively low fire hazard conditions (1-3 foot flame lengths), where ground suppression forces can operate safely. Prescribed burning may be constrained on 6,639 acres due to RNA designation, unless it meets RNA objectives. Precludes substantive mechanical fuel treatment on 12,441 acres in Alternatives 2, 3, and 5 and 35,457 acres in Alternative 4 with wilderness characteristic. Increased contiguity of land blocks through lands and realty actions allow more latitude in applying Appropriate Response on BLM lands. The resulting fuels reductions would reduce the risk of uncharacteristic fire.			



**Table 2-24. Summary of Key Effects by Resource in the John Day River Basin Plan Area.**  
(Example indicators are also provided. See more detailed discussions in Chapter 4 for additional information).

Resource (Example indicators)	Alternative 1 No Action	Alternative 2 (PRMP)	Alternative 3	Alternative 4	Alternative 5
<b>AQUATIC RESOURCES</b> (Difference between current and proper functioning conditions)	Greater short-term increases in peak flows due to potential changes in watershed vegetative cover. Upland vegetation management less likely to improve over-winter fish survival. The 100-year peak flow increases range from 0 to 21%, depending on the watershed. Improves condition ratings on 20% of streams. Forty percent of the plan area streams would not be managed toward potential. Restricts uses negatively affecting aquatic resources. Protects stream channels from construction of new roads, but to date only about five miles of streams have had roads decommissioned to restore stream function. Numeric criteria for spawning habitat are not included. Protects key watersheds (those with salmonid habitat), but management actions along intermittent streams could affect stream temperature and recruitment of large wood, increase sediment generation and reduce sedimentation of stream. Riparian Management Areas (RMA) widths vary depending on the presence of fish and whether flow is intermittent or perennial.	Less short-term increases in peak flows due to restoration of watershed cover. Enhances 113 miles of stream not enhanced in Alternative 1. Upland vegetation management is more likely to improve over-winter fish survival. Restoration of natural fire regimes through fuels treatments results in a maximum average of only a 6% increase in peak flows. Active restoration improves condition ratings on 35% of streams. Riparian areas would achieve an appropriate distribution of seral stages and would be at PFC or on an upward trend, resulting in improved channel function across a larger portion of aquatic habitat than Alternative 1. Updates current restrictions on uses by applying BMPs with new science, and uses multiple scale analysis to tailor the restoration to this particular plan area. Prescribes actions to be taken to restore RMAs within the plan area. Actions and BMPs for water quality would protect beneficial uses of stream channels by moving toward PFC and potential natural conditions. Active and passive restoration of headcuts would restore vertical stability on 22 miles of stream channel. Improves timing, intensity, and duration of peak flows and late season flows to attain instream flow objectives. Numeric criteria for spawning habitat are included. Extends protection to all watersheds in the plan area, regardless of the presence or absence of fish. RMA widths address multiple resource concerns and protect multiple species.	Reduces sediment delivery to streams as a function of road closures.	Reduces sediment delivery to streams as a function of road closures.	Reduces sediment delivery to streams as a function of road closures.



**Table 2-24. Summary of Key Effects by Resource in the John Day River Basin Plan Area.**

(Example indicators are also provided. See more detailed discussions in Chapter 4 for additional information).

Resource (Example indicators)	Alternative 1 No Action	Alternative 2 (PRMP)	Alternative 3	Alternative 4	Alternative 5
<b>WILDLIFE</b> (Security habitat)	Continuing current trends in habitat conditions from vegetation management may reduce wildlife populations or habitat. Less impact from developed recreation sites than the action alternatives. Higher livestock utilization levels, increases in the number of rangeland development projects, and more intensive grazing systems may locally reduce the amount of herbaceous cover available for priority wildlife species such as sage-grouse and the pygmy rabbit.	Seasonal timing restrictions and/or buffer distances for priority species would help protect wildlife populations. Vegetation management in general would have a beneficial impact on wildlife species by providing a mosaic of habitat features needed by key wildlife species. Provide a greater reduction in wildlife habitat from developed recreation sites than Alternative 1. Greater amounts of rangeland fire treatments through AR may cause more short-term reductions in habitat for individuals of select priority shrubland wildlife species than Alternative 1. Over 95% of all key wildlife habitats would have a prescribed road density, lowering risks to wildlife habitat from future actions. Average road densities in the Upper John Day, Lower John Day, Rudio Mountain, and Sutton Mountain areas would cause moderate reductions in wildlife security, while the North Fork and South Fork areas would cause moderate to high reductions in wildlife security.			



**Table 2-24. Summary of Key Effects by Resource in the John Day River Basin Plan Area.**  
(Example indicators are also provided. See more detailed discussions in Chapter 4 for additional information).

Resource (Example indicators)	Alternative 1 No Action	Alternative 2 (PRMP)	Alternative 3	Alternative 4	Alternative 5
<b>WILDLIFE</b>	Greater risk for reductions in wildlife security and their habitats from future actions due to lack of road density prescriptions. Greatest reductions in wildlife security due to higher interim road densities and lower amounts of area closed seasonally. There is no upper road density limit or specific direction for road locations as they relate to wildlife habitats; also, this has the highest amount of OHV Open designation. Greatest likelihood of disruptions to nesting or other activities of priority species such as the grasshopper sparrow by livestock grazing. All key habitats would have lower percentages of secure habitat (1,182 yards from an open road) than Alternatives 2, 4, and 5.	All key habitats would have higher percentages of secure habitat (1,182 yards from an open road) than Alternatives 1 and 3.	2nd greatest impact next to Alternative 1, specifically in the North Fork due to opening existing road closures, which would increase potential disturbance to big game including bighorn sheep, and increase the potential for snag loss to wood cutting in a key habitat area for Lewis' woodpecker. All key habitats would have lower percentages of secure habitat (1,182 yards from an open road) than Alternatives 2, 4, and 5.	Least impact to wildlife and wildlife habitats. Least likelihood of disruptions to nesting or other activities of priority species such as the grasshopper sparrow by livestock grazing. All key habitats would have higher percentages of secure habitat (1,182 yards from an open road) than Alternatives 1 and 3. Least of all alternatives (as well as Alternative 4) in areas open to cross-country OHV use.	All key habitats would have higher percentages of secure habitat (1,182 yards from an open road) than Alternatives 1 and 3. Least of all alternatives (as well as Alternative 4) in areas open to cross-country OHV use.



**Table 2-24. Summary of Key Effects by Resource in the John Day River Basin Plan Area.**  
(Example indicators are also provided. See more detailed discussions in Chapter 4 for additional information).

Resource (Example indicators)	Alternative 1 No Action	Alternative 2 (PRMP)	Alternative 3	Alternative 4	Alternative 5
<b>WILDERNESS CHARACTERISTICS</b> (Maintenance of wilderness qualities)	Lack of direction for the use of fire for resource benefit to meet resource objectives and the full range of Appropriate Response could result in fewer areas being effectively managed for ecosystem health and the natural role of fire. These areas would be managed like similar and adjacent lands and would not necessarily retain characteristic landscape qualities. Would allow energy and mineral development of these lands to continue within existing restrictions. Would allow mechanical treatment on all lands with wilderness characteristics outside of areas designated as Wilderness or WSA.	Designating these lands as VRM Class II would help retain the characteristic landscape and provide a balance between protecting visual resources and allowing some fuel treatments, including limited mechanical treatment of juniper and thinning of diseased timber to protect naturalness. Limiting OHV use to signed, designated routes on areas managed to protect wilderness character would help prevent new unauthorized routes from being created, reduce unauthorized cross-country vehicle use, and prevent the spread of noxious weeds. These lands would be available for mining operations (provided the proposed use would not impair wilderness characteristics) under no surface occupancy requirements for fluid mineral development and closed to wind energy development, helping to protect their wilderness characteristics. Allows more mechanical vegetation management on lands with wilderness characteristics than Alternative 4, but less than Alternative 1. Unlike Alternative 1, treatments would be designed to improve ecological health and long-term wilderness characteristics. 54.8% of lands with wilderness characteristics would not be managed to protect the full complement of wilderness characteristics.	Would provide protections described in Alternative 2 to all lands with wilderness characteristics (35,457 acres). Vegetation treatments would rely on fire for resource benefit or prescribed fire, which may reduce the extent and expediency of ecological recovery of some sites. On these sites effects to short-term impacts to wilderness characteristics would be lower; however, the risks to ecological integrity of the sites may be increased over the long term.	Same as Alternatives 2 and 3.	
<b>VISUAL RESOURCES</b> (Visual quality)	Lack of proactive vegetative and fuel treatments would result in reduced visual quality due to greater risks of stand-replacing wildland fire events. OHV use would reduce visual quality greater than the action alternatives.	Retention of visual quality would be highest due to proactive vegetation and fuels treatments on forestlands, resulting in less potential for catastrophic wildland fires that lower visual quality. Protection of existing visual quality would be upgraded in the North Fork John Day River area from Visual Resource Management (VRM) Class III and IV to VRM Class II in the river canyon and Gilman Flat. OHV use would reduce visual quality to a lesser extent than Alternative 1.			



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(Example indicators are also provided. See more detailed discussions in Chapter 4 for additional information).

Resource (Example indicators)	Alternative 1 No Action	Alternative 2 (PRMP)	Alternative 3	Alternative 4	Alternative 5
<b>WILD and SCENIC RIVERS (WSR)</b> Segment of the North Fork John Day River (NFJDR) determined eligible for inclusion in the WSR system. (Condition of Outstandingly Remarkable Values)	Existing recreation, scenery and fishery Outstandingly Remarkable Values (ORVs) would continue to be protected by existing federal and State Scenic Waterway regulations. VRM classes for public lands in the plan area would continue to provide interim protection and enhancement of recreation and scenic ORVs on public lands within existing designated WSRs. Existing federal regulations such as PACFISH and Oregon State Scenic Waterway, ODFW, DEQ, and other regulations would help protect the free-flowing character of the North Fork John Day River.	Potential Congressional designation of the NFJDR as part of the national WSR system (scenic classification) would provide an additional level of protection to ORVs than provided under the State Scenic Waterway regulations, PACFISH, and the Endangered Species Act. Most consistent with the existing State Scenic Waterway classification of this river segment as an Accessible Natural River Area. The recreation ORV would be protected and enhanced by managing OHV use to allow short and long term recreation use within this river corridor.	Effects the same as the PRMP (Alternative 2), except if designated as a WSR, it would be classified as part scenic and part recreational. The recreational classification on public lands from Camas Creek to Mallory Creek would be managed to provide more flexibility in how all public uses are managed and allow a higher level of recreation development than Alternative 2.	No federal interim protection of the scenic, recreation and fishery ORVs would occur, but protections provided by the State Scenic Waterway designation, ACS, and ACEC designation would continue to provide a lower level of protection of river ORV values than Alternatives 2, 3, and 5.	Same as Alternative 2.



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(Example indicators are also provided. See more detailed discussions in Chapter 4 for additional information).

Resource (Example indicators)	Alternative 1 No Action	Alternative 2 (PRMP)	Alternative 3	Alternative 4	Alternative 5
<b>WILDERNESS AND WILDERNESS STUDY AREAS</b>  (Maintenance of wilderness qualities)	Lack of ability to use fire to achieve resource objectives and the full range of Appropriate Response may result in lower ecosystem health in some WSAs than the action alternatives. If these lands are released by Congress from WSA status, changing the VRM Class from a VRM Class I to a VRM Class II would reduce protections to the visual resources of these lands. If released, limited mechanical treatments to reduce juniper encroachment could be conducted on these lands.	Fire to meet resource objectives and use of the full range of Appropriate Response may better improve ecosystem health in some WSAs than under Alternative 1. Designating some WSAs as ACECs (see Chapter 2) would protect the scenic values of these lands if they were released by Congress from WSA status. If released, managing the existing Sutton Mountain, Pat's Cabin, and Aldrich Mountain WSAs under no-surface-occupancy (NSO) requirements for oil and gas development and closed to wind energy development would help protect the scenic value of these lands. Continuing to manage these lands with minimal motorized vehicle use on designated trails would protect resource values and reduce spread of noxious weeds. Managing the lands within the existing Strawberry Mountain WSA as closed to motorized vehicle use, except for administrative use, would help protect the adjacent USFS Wilderness Area from motorized vehicle intrusions.			



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(Example indicators are also provided. See more detailed discussions in Chapter 4 for additional information).

Resource (Example indicators)	Alternative 1 No Action	Alternative 2 (PRMP)	Alternative 3	Alternative 4	Alternative 5
<b>LIVESTOCK GRAZING</b> (Available animal unit months [AUMs]. Conflicts with other uses or ecological values)	Results in the largest number of acres and AUMs remaining available for livestock grazing. Greatest potential contribution to local livestock sales. Lowest potential long-term effects of anticipated forage reductions on individual lessees. Likely to have conflict levels somewhat higher than those expected for Alternative 4. Approximately 1,900 AUMs would be taken out of production each year (6.2% of the AUMs on public lands in the John Day Basin) due to resting areas following prescribed burning or rehabilitation.	Assuming full relinquishment; lowest number of acres and AUMs remaining available for livestock grazing (about 85% less than Alternative 1). Lowest potential contribution to local livestock sales. Highest potential long-term effects of anticipated forage reductions on individual lessees. Conflicts between livestock grazing and other uses on public and adjacent private land are less likely than other alternatives.	Assuming full relinquishment, retains the highest number of AUMs of the action alternatives. Likely to have conflict levels somewhat higher than those expected for Alternatives 2, 4, and 5, but less than Alternative 1.	Assuming full relinquishment, would retain slightly more AUMs than Alternative 2. Likely to have conflict levels somewhat higher than those expected for Alternative 2.	Assuming full relinquishment, would retain slightly more AUMs than Alternative 2. Likely to have conflict levels somewhat higher than those expected for Alternatives 2 and 4 but less than Alternatives 1 and 3.



**Table 2-24. Summary of Key Effects by Resource in the John Day River Basin Plan Area.**

(Example indicators are also provided. See more detailed discussions in Chapter 4 for additional information).

Resource (Example indicators)	Alternative 1 No Action	Alternative 2 (PRMP)	Alternative 3	Alternative 4	Alternative 5
<b>RECREATION OPPORTUNITIES</b> (Availability of OHV routes and open areas; conflicts between uses)	Overall, resource constraints on recreation opportunities are less than the action alternatives. Managed recreation settings only occur along the John Day River and WSAs. Non-motorized opportunities are only managed in WSAs. Greatest opportunities for cross-country OHV use. Users would continue to create routes and trails. Least area closed seasonally to motorized use, and no limits on road density to protect wildlife. Class II rock crawling areas would continue to be user created. No time, day, or use constraints on OHV use in Little Canyon Mountain (LCM). Least restrictive alternative for OHV play in LCM pit areas. Evaluation of commercial recreation permit proposals would consider only existing management goals identified for the John Day River SRMA. Continuing the existing moratorium on new commercial permits would not address the backlog of permit requests BLM has received and continues to receive for the plan area.	Fewer opportunities for cross-country OHV use than Alternatives 1 or 3. OHV riding opportunities in LCM reduced to specific hours of the day and areas of use. Class I and III restrictions in south pit of LCM. Reduced number of interim routes from Alternative 1; however, the majority of these routes are not accessible to the general public.	Fewer opportunities for cross-country OHV use than Alternative 1, but more than Alternatives 2, 4, and 5. OHV riding opportunities in LCM reduced to specific hours of the day and specific areas of use. Most miles of Interim designated routes; however, the majority of additional routes are not accessible to the general public. Provides the most miles of interim routes in the North Fork.	Fewer opportunities for cross-country OHV use than Alternatives 1, 2, and 3. Fewest OHV riding opportunities in LCM due to hours of the day, day of week, and specific areas of use restrictions. Slightly fewer interim routes designated than Alternative 2.	Fewer opportunities for cross-country OHV use than Alternatives 1, 2, and 3. Most restrictive (prohibitive) of all alternatives for OHV play in pit areas. Slightly fewer interim routes designated than Alternative 2.
	Overall, resource constraints on recreation opportunities are more than Alternative 1. Uplands managed for motorized and/or non-motorized opportunities. Greater non-motorized opportunities than Alternative 1. Greater area closed seasonally to motorized use and road density restrictions to protect wildlife than Alternative 1. Class II rock crawling areas allowed in designated areas. Evaluation of commercial recreation permit proposals would consider existing management goals identified for the John Day River SRMA, plus management goals identified for additional SRMAs and ERMAs. Discontinuing the moratorium on new commercial recreation permits would create new annual upland-based commercial permit opportunities as the BLM addresses the backlog of NEPA analyses required for permit issuance.				



## Chapter 3 Affected Environment



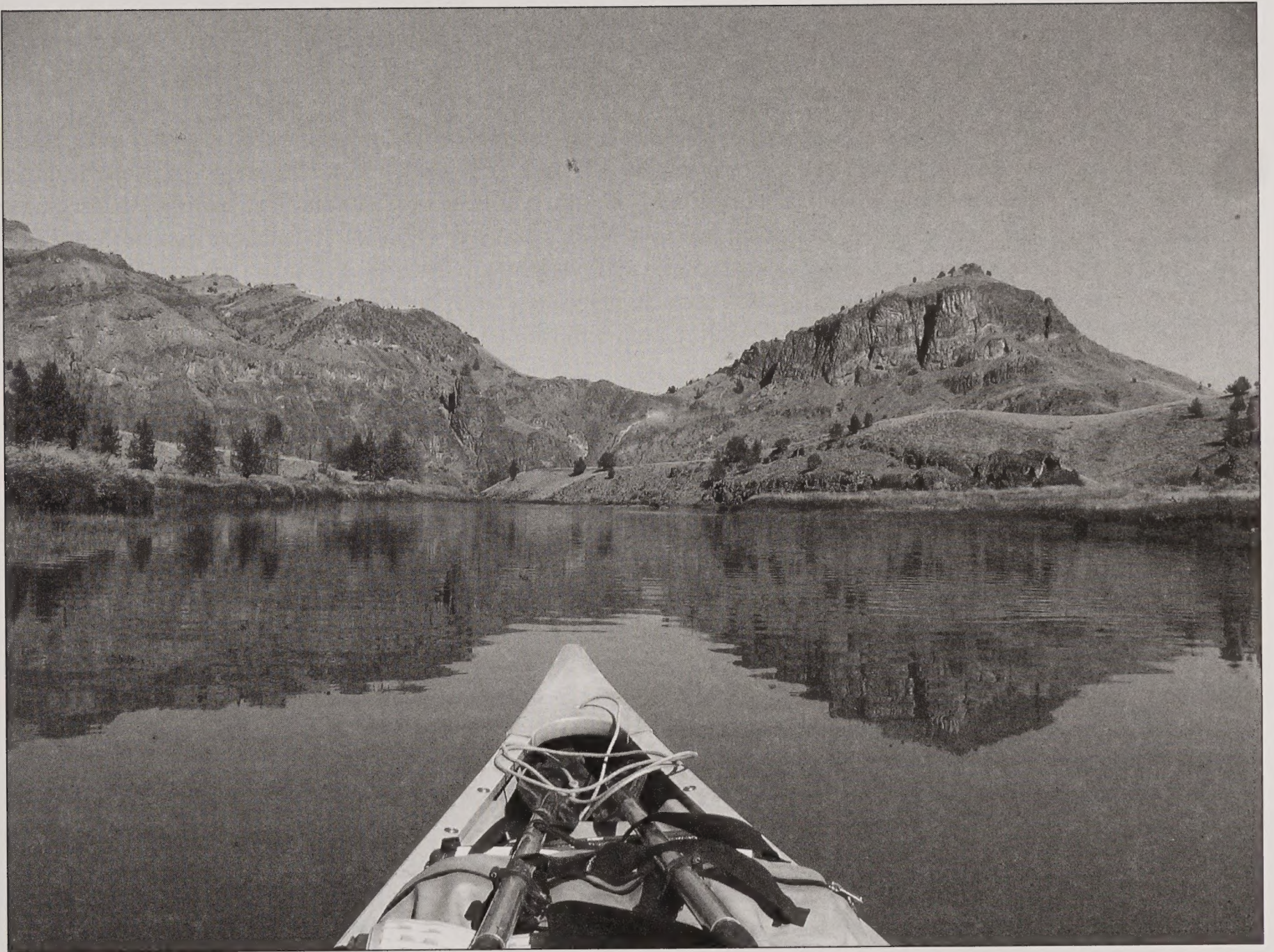






# Chapter 3

## Affected Environment





## **Summary of Changes between the Draft and Final EIS/RMP**

The FEIS has been updated to include updated Social/Economic information based on new research data. Conditions and trends in local economies now reflect the current situation and trends up to 2009 for most data sets. Information has been added relative to climate, carbon storage, and greenhouse gas emissions including information inadvertently omitted from the Draft but included as an Errata page posted on the planning web page. Updated information has been added related to BLM's wilderness characteristics inventory findings.



## A Personal View

### *Bend, fold, spindle, and/or mutilate!*

*A Journey through Time is the name of a scenic motor route through the heart of the John Day Basin. It is a neck-wrenching drive in the spring because one's vision is constantly redirected from the greenish gray water of the river flowing past brilliant green fields, to pastel colored slopes covered by grass or brush or barren clays, to layer upon layer of red to chocolate-covered basalt. Once, approaching Picture Gorge, my passenger became nervous because as I was driving, I was counting obvious layers of rock the river had spindled through—11, 12, no 14 then I was certain that I had noted 17 layers. Besides making my passenger nervous there was a logical reason for doing this. Time! How much time was taken to create each layer? These were created as rapidly as it took for lava to spread across the landscape. Bracketing these thick rapidly created layers are sedimentary layers created over many millennia by dead things such as leaves, sticks, palm trees, and the remains of creatures ranging from microscopic sea creatures to extremely large prehistoric rhinoceros. Caps of volcanic ash spewed by ancient volcanoes separated these layers and, not inconsequently, frequently preserved the remains of plants and animals that no longer exist.*

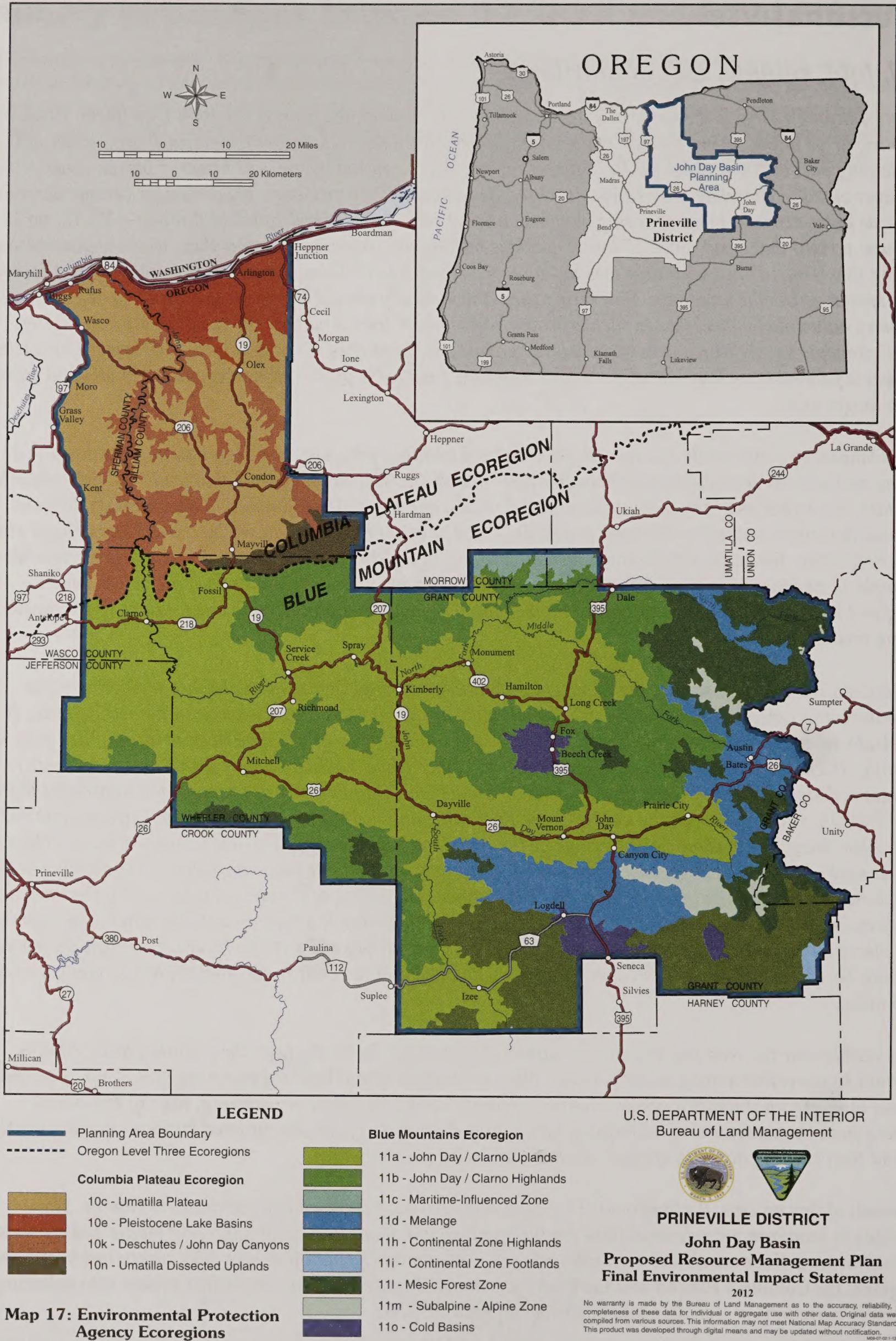
*Today's landscape is the result of a contest between land building processes and degradation processes. Land building includes the introduction of flow after flow of lava, the deposition of dead plants and animals and other sediments, the drifted ash from violent volcanic eruptions, and the physical forces that have bent, folded, and mutilated the layers created by the other processes. These physical forces are caused by the shifting of huge plates of rock deep below the surface of the earth, usually at rates much slower than we can perceive. The occasional earthquake is evidence of brief periods of rapid movement as these plates slip across each other. The bending, folding and mutilating of the strata created by the other land building processes do crazy things to the sensible layering process.*

*The National Park Service staff at the Thomas Condon Paleontology Center has published a diagram of the sedimentary and igneous layers in this area (<http://www.nps.gov/joda/naturescience/john-day-strata.htm>). If these strata are measured as originally deposited above the lowest layer (the Goose Rock stratum), they are over three miles thick. However, shifts deep below the surface have tilted, bent and folded them. As a result, our view of the strata is distorted (made visible through erosion by the John Day River). For example, the uppermost layer is "only" 3,000 vertical feet above the lowest Goose Rock stratum, visible just a few miles downstream from Picture Gorge. Also, Sheep Rock, about 1,100 feet above the John Day River is capped by a few layers of basalt. However, one mile south in Picture Gorge, basalt flows are layered to about 800 feet above the river and the bottom layers near the river correspond to the "cap layer" on Sheep Rock. The tilting of the strata explains why the three miles of thickness results in only 3,000 feet of elevation gain—the thickness of a layer is actually better measured in many places by measuring the actual distance between the beginning and end of a layer rather than the vertical thickness. So, if one measures from Goose Rock to the top layer on the crest to the immediate east you get a little over 3 miles.*

*Layers visible near the National Monument do not necessarily exist throughout the planning area. What is important to remember is the general process. What is common throughout the planning area is a process that involves building up through a combination of volcanism and sedimentation; bending, folding and tilting resulting from the movement of underlying plates; and the process of erosion initiated by water moving gently at first and then rushing down rivers and streams within the planning area.*

*As a result of this process, the landform of the planning area has developed and continues to change. The variations in landform provide conditions for the development of varying combinations of plants and animals. On the broadest scale these areas have been referred to as ecoregions. The planning area falls within two broad scale ecoregions, the Columbia Plateau and the Blue Mountains. These ecoregions are further broken into subecoregions that reflect variations in elevation and other topographic variables.*







# Introduction

The following pages describe in more detail the geologic history and the characteristics of ecoregions and subcoregions within the planning area. This information provides the foundation for understanding the plant and animal communities within the planning area; why people live, work, and play here; and how the natural resources are affected, used, and valued by residents and visitors—all of which are described in the balance of the chapter.

## Ecoregions

The river, green fields, pastel hills, brown rimrock, and gentle mountains of the John Day Basin alter so slowly they don't seem to change at all. This illusion is dispelled when the earth suddenly moves beneath us in an earthquake, a landslide covers the road, or the river rapidly covers the valley in a flood. Other processes are hidden deep in the earth, slowly forming rocks by the inch. These changes are the heart of the John Day Basin landscape. The weather changes the landscape, too. Rains soak it in the fall, snow blankets it in the winter, and intense thunderstorms chew it up in the summer.

Combinations of landscape and climate create different ecoregions. Approximately 77% of BLM lands within the John Day Basin planning area fall within the Blue Mountains ecoregion and 23% within the Columbia Plateau ecoregions. To better understand the planning area, see information about these two ecoregions as well as "subcoregions" on the next few pages (Map 17: EPA Ecoregions and Table 3-1). Over 60 percent of the BLM land is within a single subcoregion, the John Day/Clarno Uplands, which is within the Blue Mountain Ecoregion. The ecoregions and subcoregions are described below in a roughly north to south direction.

**Table 3-1. Ecoregion Acres.**

Ecoregion	Subcoregion	BLM Plan Area Acres
Columbia Plateau	Umatilla Plateau	10,351
	Pleistocene Lake Basins	12,603
	Deschutes/John Day Canyons	79,319
	Umatilla Dissected Uplands	885
Blue Mountains	John Day/Clarno Uplands	275,983
	John Day/Clarno Highlands	56,440
	Maritime-Influenced Zone	2,503
	Melange	8,559
	Continental Zone Highlands	8,678
	Continental Zone Foothills	184
	Mesic Forest Zone	561
	Subalpine-Alpine Zone	45
	Cold Basins	40





## Columbia Plateau Ecoregion

The Columbia Plateau Ecoregion, which covers about 32,100 square miles, occurs in portions of Idaho, Oregon, and Washington. About 20 percent of the planning area (6,630 square miles) is within this ecoregion. The Oregon portion of the ecoregion extends from the eastern slopes of the Cascades Mountains, south and east from the Columbia River to the Blue Mountains. The centerpiece of this ecoregion, the Columbia River, has greatly influenced the surrounding area with cataclysmic floods and large deposits of wind-borne silt and sand. Over time, winds scoured the floodplain, depositing silt and sand across the landscape and creating ideal conditions for agriculture: rolling lands, deep soil, and plentiful flowing rivers including the lower stretch of the John Day River. The ecoregion is made up entirely of lowlands, with an arid climate, cool winters, and hot summers.

The Columbia Plateau produces the vast majority of Oregon's grain and has the second highest agriculture sales per year for any ecoregion in Oregon. More than 80 percent of the ecoregion's population and employment is located in the Umatilla County, which includes the communities of Pendleton and Hermiston. Other population centers include The Dalles, Condon, and Heppner. Almost all of the Columbia Plateau ecoregion is privately owned (Oregon Conservation Strategy 2006).

The foundation of the Columbia Plateau Ecoregion is its geology. Beginning 17 million years ago, massive eruptions of basalt flowed out of cracks or "vents" in the earth. These vents were located in northeastern Oregon, central western Idaho and southeastern Washington and produced lava flows over a period of 11 million years. This layering of basalt flows formed the Columbia River Basalt Group (CRBG) (Orr *et al.* 1992). Erupting from large fissures measuring 10 to 25 miles in length, the molten basalt filled basins in southeastern Washington and northeastern Oregon (Orr *et al.* 1992). The average volume of each flow was more than 100 cubic miles of basalt with some single flows exceeding 500 cubic miles. In total, approximately 42,000 cubic miles of basalt flowed over an area almost the size of the state of Washington, ranking the CRBG as the second largest flood basalt group in the world (Bishop 2003, Orr *et al.* 1992). Southward, the CRBG continues to thin and tapers out in the Blue Mountains. Individual flows can be up to 200 feet thick, but vary substantially.

The flood basalt flows of the CRBG had dramatic effects on the Columbia River. Prior to eruption of the basalt flows, the ancestral Columbia River was situated far south of its present location. Gorge-filling basalt flows periodically plugged and disrupted the flow of the Columbia River, eventually forcing it northward to its modern day location.

## Subecoregions of the Columbia Plateau

Within the planning area, the Columbia Plateau contains four subecoregions: Pleistocene Lake Basin, Umatilla Plateau, Deschutes/John Day Canyons, and Umatilla Dissected Uplands.

The **Pleistocene Lake Basin** is a nearly level to undulating lake plain with very little surface water runoff. Surface geology consists of ancient lake and flood deposits associated with ice plugged lakes in northern Washington and western Montana from about 10,000 years ago. These glacial lakes backed up hundreds of cubic miles of water before their impounding ice dams failed and released catastrophic debris floods (as many as 40 episodes) that permanently scarred the landscape on its way to the ocean. Lake Condon in the northeastern portion of the plan area is one of these ancient glacial lakes. Major vegetation in this sagebrush steppe environment includes needle and thread grass, Indian ricegrass, bluebunch wheatgrass, Sandberg bluegrass, and basin big sagebrush. Alien



cheatgrass covers broad areas. The sagebrush steppe is used primarily for irrigated cropland, some rangeland, and irrigated poplar tree farms for pulp. Crops include winter wheat, potatoes, alfalfa, and silage corn.

Elevations range from 300 to 1,200 feet, and local relief ranges between 10 and 200 feet. The climate is very dry. The Pleistocene Lake Basins generally receive the most precipitation from November through February. These winter storms bring rain to lower elevations and snow to higher ridges and peaks. Mean annual precipitation ranges from 7 to 10 inches. Mean annual frost-free days range from 140 to 200.

The **Umatilla Plateau** is a nearly level to rolling plateau mantled in loess (fine-grained, wind-deposited soil.) Glacial features such as patterned-ground are common. Most streams are ephemeral. Surface geology was created by the Wapanum and Grande Rhonde flows of the Columbia River Basalts. The basalt is occasionally cut by gullies caused by erosion, or by sand, gravel, or large boulders deposited by glacial activity. The Umatilla Plateau is primarily vegetated by bluebunch wheatgrass with scattered sagebrush steppe, Sandberg bluegrass, and Idaho fescue. Stiff sagebrush occupies very shallow soils sites. Introduced cheatgrass covers broad areas of this Subecoregion. Agriculture consists of mostly cropland and some grassland. Non-irrigated winter wheat is grown using the crop-fallow rotation method. Irrigated land grows winter wheat, alfalfa, and barley.

Elevations above sea level range from 1,000 to 3,200 feet. Occasionally, valleys cut down several hundred feet from the plateau. The nearly level to rolling relief varies between 200 and 600 feet from hilltop to bottom. Mean annual precipitation ranges from 9 to 15 inches. Most streams are ephemeral. The mean annual frost-free days vary from 100 to 170.

The **Deschutes/John Day Canyons** are very steep to precipitous canyon lands containing the Deschutes and John Day rivers. Surface geology is the same as the Umatilla Plateau but the rivers have exposed the depth of these layers. The land is sparsely covered by grasses and shrubs. Land is used for livestock grazing and wildlife habitat. Soils contain a significant amount of fragmented rock. This sagebrush steppe includes bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, Wyoming big sagebrush, and cheatgrass. White alder, Lewis' mockorange, western clematis, and chokecherry run along narrow canyon riparian areas.

Elevations range from 200 to 3,600 feet, with deep valleys cutting down 1,000 to 2,000 feet. Mean annual precipitation ranges from 9 to 14 inches. The mean annual frost-free days vary from 100 to 190.

The **Umatilla Dissected Uplands** are dissected, hilly uplands with a terrace-like appearance. Slopes are rolling to very steep. Surface geology consists of Grand Rhonde Basalts with canyons cutting down through the older John Day and Clarno Formations. These uplands are mostly used as rangeland and wildlife habitat. Vegetation is primarily wheatgrass-bluegrass/ Idaho fescue, bluebunch wheatgrass, and Sandberg bluegrass. Forested, higher elevation, north-facing slopes contain Douglas-fir, ponderosa pine, common snowberry, pinegrass, and ninebark.

Elevations range from 1,600 to 4,400 feet. Hills rise and fall 500 to 1,500 feet. Mean annual precipitation ranges from 9 to 14 inches. Mean annual frost-free days vary from 100 to 160.





## Blue Mountains Ecoregion

At 27,380 square miles, the Blue Mountains Ecoregion is the largest in Oregon, accounting for about 80 percent of the planning area (6,630 square miles). Named for its largest mountain range, the Blue Mountains, this ecoregion is a diverse complex of mountain ranges, valleys, and plateaus containing deep rocky-walled canyons, glacially cut gorges, sagebrush steppe, juniper woodlands, mountain lakes, forests, and meadows. Broad river valleys support ranches surrounded by irrigated hay meadows and wheat fields. Elevation influences a varied climate that ranges in temperature and precipitation. Overall, the ecoregion has short, dry summers and long, cold winters. Much of the precipitation (8 to 24 inches on average annually) falls as snow; the snow melt gives life to the rivers and irrigated fields (Oregon Conservation Strategy 2006).

Wood products and cattle production dominate the economy of the ecoregion, but dryland wheat and alfalfa are important in the river valleys (Oregon Conservation Strategy 2006). The ecoregion supports some of the finest big game hunting in Oregon and attracts tourists year-round to the scenic lakes and rivers, geologic features, and alpine areas that characterize the area. The cities of Mitchell, Dayville, Monument, and John Day may benefit from this tourism.

While the Blue Mountain Ecoregion contains some of the largest intact native grasslands in Oregon and several conservation areas, fire suppression, selective timber harvest, and unsustainable grazing management have impacted habitat for wildlife. These activities have resulted in changes in vegetation that have increased vulnerability of forests to insects, disease, and effects of severe wildfire. The result, in part, has become a new complement of invasive species that gain a foothold after sagebrush steppe fires move through the area.

The foundation of the Blue Mountains Ecoregion is its geology. Approximately 200 million years ago, seas covered the entire state of Oregon. The Pacific Coast shoreline was in Idaho and eastern Washington (Orr *et al.* 1992). The Blue Mountains were a series of volcanic island chains (similar to present day Hawaii) off the Mainland Coast. These islands were perched on top of a slab or plate of oceanic crust in the Pacific Ocean (see Figure 3-1).

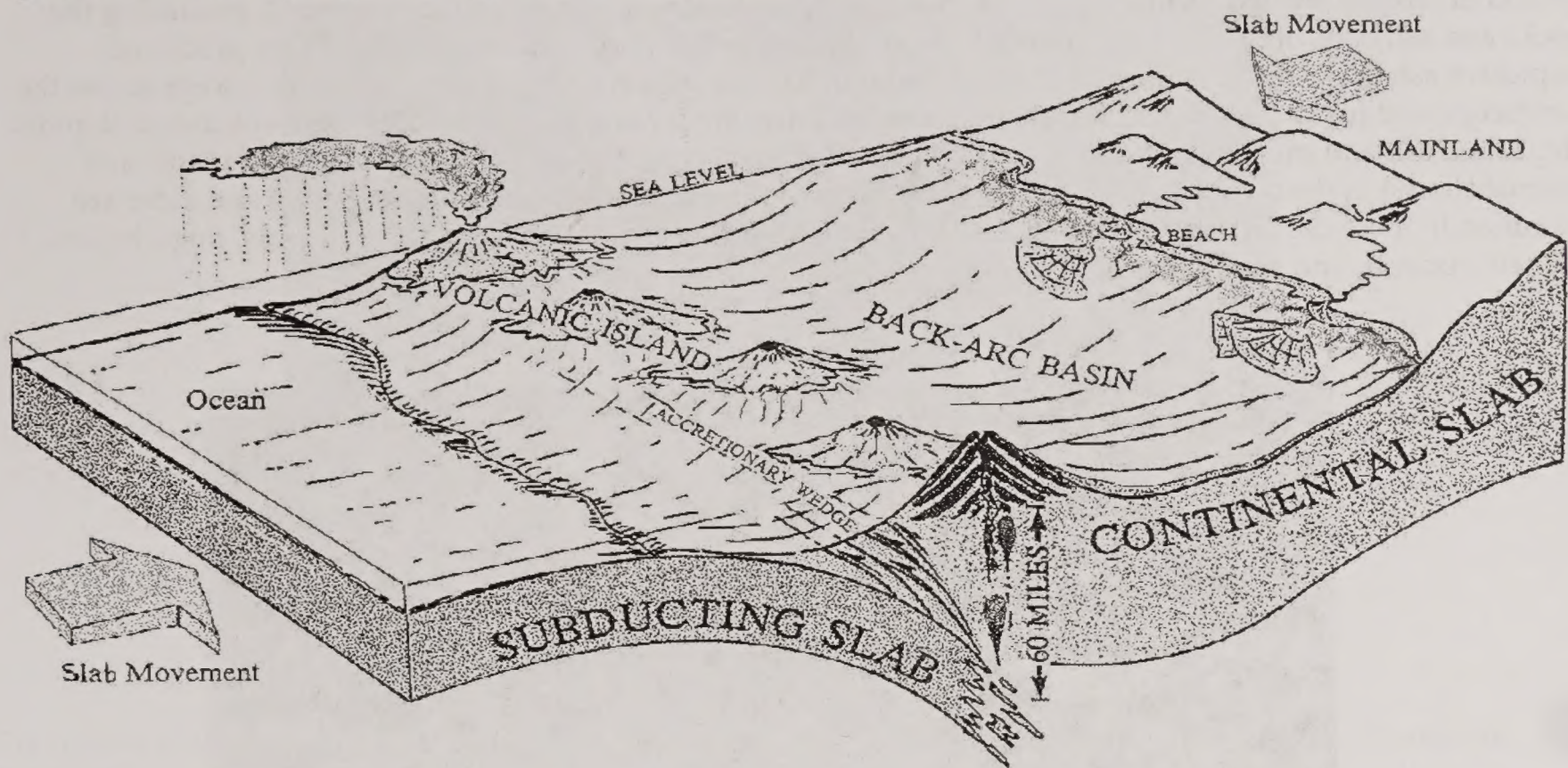
As the slabs moved toward each other, the Oceanic slab sunk beneath the North American Continental slab. The Oceanic slab scraped off the Volcanic Islands onto the Mainland before diving down or “subducting” under the mainland. Across 400 million years, many chains of volcanic islands sprouted and were scraped or “accreted” onto the North American Continent. Oceanic sediment and ash from the volcanoes were sandwiched onto the mainland in between the volcanic islands. These series of collisions created new landmasses called “terranes.”

This succession of terranes displaced the coast to its current location. Three terranes are recognized in the John Day planning area: Baker, Grindstone, and Izee. Each terrane contains unique groups of rocks and fossils. The Grindstone terrane contains some of the oldest rocks in Oregon. Limestone and other layered rocks date from about 380 million years old. The Baker terrane is composed of heated and folded rocks from the oceanic crust. Table 3-2 displays the major rock types and ages of all three terranes.

Between 120 and 160 million years ago, these terranes were intruded by magmas that later cooled to form masses of granodiorite and gabbro (Orr *et al.* 1992). Along with the magma came hot fluids that mineralized the surrounding rocks with gold-bearing veins (Brooks and Ramp 1968, Bishop 2003).



Figure 3-1. Underlying Geology



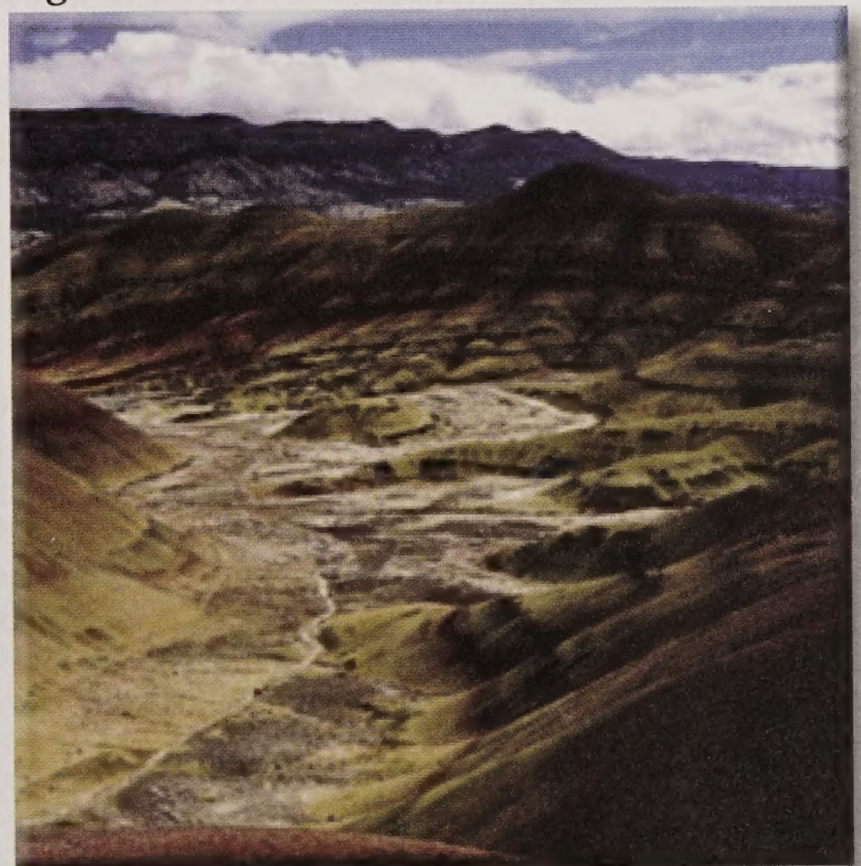
Drawing modified from William and Elizabeth Orr (1996) - published with permission of the authors.

Table 3-2. Accreted Terranes in the Planning Area with Rock Types and Age.

Terrane	Major Rock Types	Age
Grindstone	limestone, mudstone, siltstone, sandstone, chert, argillite	380 - 235 million years ago
Izee	volcanic and volcanoclastic sedimentary rocks	220 - 175 million years ago
Baker	Peridotite, gabbro, basalt, shale, argillite, chromite, and diorite	285 - 175 million years ago

The oldest rocks that formed on the local surface of the Blue Mountain ecoregion are of the Clarno Formation (see Figure 3-2). Placement of these rocks began approximately 50 million years ago during the birth of the Clarno volcanoes in eastern Oregon (Bishop 2003). The Cascade Mountains were not present at that time and the Pacific Ocean shoreline was east of the modern day location of the Cascades (Orr *et al.* 1992). Moist air from the Pacific Ocean created a wet tropical climate and supported lush woodlands and open grasslands. The Clarno volcanoes erupted large quantities of ash, rhyolite, and andesite. Thick, loose ash was deposited on steep volcano slopes. The ash frequently mixed with water to form large mudflows. These flows moved like molasses over the landscape, entombing both plants and animals, and preserving them as fossils. Plant fossils found in these deposits include petrified wood, leaves, nuts, fruits, and seeds of tropical hardwoods (Retallack *et al.* 1996). Fossilized remains of prehistoric horses and other mammals are also found in the Clarno Formation.

Figure 3-2. Clarno Formation.





About 33 million years ago, the climate shifted from tropical to temperate, Clarno volcanism ceased and a short period of erosion ensued (Bishop 2003). Then, a new episode of volcanic activity commenced, producing the rocks and ash beds of the John Day Formation (see Figure 3-3). The volcanoes of the John Day produced explosive ash eruptions and flows that blanketed much of the region. Dense clouds of hot ash swept across the landscape and fused into "tuffs." Basalt, andesite, and rhyolite lavas also flowed from these volcanoes. Rapidly deposited ash and mud from volcanic activity provided ideal conditions for fossilization of the plants and animals living in the region at the time. Preserved leaves from dawn redwood (metasequoia) and alder are common in these deposits (Retallack *et al.* 1996). Animal fossils include various prehistoric cats, dogs, horses, camels, rodents, and rhinoceroses.

**Figure 3-3. John Day Formation.**



Approximately 16 million years ago, massive flows of basalt erupted from large cracks near Monument and Kimberly. The lava flowed out at speeds up to 30 miles per hour. Layer upon layer of columnar basalt form the Picture Gorge Basalts (Orr *et al.* 1992). Between the basalt layers are thin bands of silt and limestone, telling us that there was often a lull between successive volcanic flows. The Picture Gorge Basalts cap the John Day and Clarno Formations (see Figure 3-4).

## Subcoregions of the Blue Mountains

The Blue Mountains include nine Subcoregions in the planning area: John Day/Clarno Uplands, John Day/Clarno Highlands, Maritime-Influenced Zone, Melange, Continental Zone Highlands, Continental Zone Foothills, Mesic Forest Zone, Subalpine Zone, and Cold Basins.

The **John Day/Clarno Uplands** are moderately to highly dissected hills and low mountains. Scattered buttes occur throughout the hills and mountains. Major valleys are formed by the John Day River. Surface geology consists of volcanic ash, alluvium, and piedmont gravels from the Clarno and John Day formations. Basalt, tuff, andesite, rhyolite, and breccia from Picture Gorge Basalt and other isolated volcanic activity are also part of the surface geology. Dominant vegetation associations include wheatgrass-bluegrass and juniper steppe woodland. The vegetation includes bluebunch wheatgrass, Idaho fescue, basin wildrye, Wyoming big sagebrush, and Thurber's needlegrass; Western juniper woodland transitions into higher elevation ponderosa pine forest. Riparian areas include white alder, Lewis' mockorange, chokecherry, clematis, willows, black cottonwood, and water birch.

Elevations range from 1,600 to 4,400 feet and relief from hilltops to bottoms vary from 400 to 2,500 feet. Mean annual precipitation ranges from 10 to 16 inches. Mean annual frost-free days vary from 70 to 150.



**Figure 3-4. Picture Gorge Basalts on top of Clarno Formation**

US Park Service photo from 1925.

The climate of the John Day/Clarno Uplands has a noteworthy history of intense thunderstorms. Occasional thunderstorms produce such intense precipitation that localized flooding ("flash floods") occurs.

Dr. John Merriam, a University of California paleontologist, experienced just such a flood during a fossil hunt in 1900. On June 23, Merriam and a companion were digging near Bridge Creek, 6 miles downstream from Mitchell in central Oregon. They were working in the shade of a low cliff under a partly cloudy sky. Suddenly,

*... there began to fall what might best be called balls of water. Thinking the shower would soon pass, we kept at work, but heavy clouds swung across the sky. During the next hour, as we made our way out of the area, we were exposed to one of the hardest rain storms I have ever seen.*

That storm devastated a large area in Wheeler County. Crops were destroyed, mudslides and rockslides were common, and farm buildings were destroyed. Eyewitnesses reported hailstones up to 6 inches in diameter. Fortunately, no lives were lost. Not far away from the site of that storm, there is a secluded graveyard where Nancy Wilson and three of her children are buried. They died on June 2, 1884, when an intense thunderstorm sent a "wild torrent of muddy boulder-laden water over the flatlands of what is now Painted Hills State Park."

The same area was also the scene of one of the largest flash floods in the United States. On July 13, 1956, intense thunderstorms and heavy rain occurred near Mitchell between five and six o'clock in the evening. During the event, Bridge Creek rose from its depth of 1 foot to a torrent that destroyed upwards of 20 buildings including houses, businesses, a garage, and a post office. A highway was blocked by washouts and mud and rockslides. People who had accidentally left open containers out during the 50-minute storm calculated that the rainfall was 3.5 inches in Mitchell and 4 inches in Girds Creek. This was more than 25% of the area's annual average rainfall!

Intense thunderstorms similar to those in the Mitchell area have been observed near Spray and most recently along the South Fork John Day River. These intense thunderstorms frequently wash across the John Day/Clarno Uplands, taking out roads and creating new river features.

The **John Day/Clarno Highlands** consist of moderately to highly dissected, steeply sloping low mountains and rolling hills. The area includes broad streams fed more by springs than by snow melt. Surface geology is similar to that of the John Day/Clarno Uplands, but also includes colluvium from the eroding Picture Gorge Basalts. Dominant vegetation associations include western ponderosa pine forest/open ponderosa pine, Douglas-fir, and western juniper. Vegetation includes mountain-mahogany, common snowberry, mountain big sagebrush, antelope bitterbrush, elk sedge, Idaho fescue, and bluebunch wheatgrass. Riparian areas include grand fir, gray alder, redosier dogwood, ninebark, Wood's rose, Rocky Mountain maple, and various willows. These forest and woodland areas are used for woodland grazing, logging, and recreation.



Elevations range from 3,000 to 6,200 feet. The mountains and hills rise from 200 to 2,000 feet. Mean annual precipitation ranges from 16 to 28 inches. Mean annual frost-free days vary from 30 to 100.

The **Maritime-Influenced Zone** consists of gently-sloping to hilly volcanic plateaus and mountain valleys. Springs occur throughout this zone. Most of the surface geology consists of the Grande Ronde Basalt flow that was part of the Columbia River Basalt flows. Major vegetation associations include Western ponderosa pine forest and grand fir/Douglas-fir forest. Most of the forest is composed of ponderosa pine with scattered Douglas-fir and grand fir. Dense forest understory and riparian shrub cover consists of common snowberry, rose spirea, ninebark, serviceberry, and redosier dogwood. Herbaceous ground cover includes heartleaf arnica, pinegrass, elk sedge, Idaho fescue, Sandberg bluegrass, and bluebunch wheatgrass. This forested landscape is primarily used for logging, grazing, wildlife habitat, and recreation.

Elevations range from 3,000 to 6,000 feet. The plateaus drop down 150 to 1,600 feet to valley bottoms. The climate is influenced by moderate maritime weather and oceanic trends. Mean annual precipitation ranges from 20 to 40 inches. Most of this annual precipitation arrives in the late winter and early spring. Compared to other areas in Oregon, the monthly precipitation values are fairly evenly distributed. Mean annual frost-free days range from 40 to 80.

The **Melange** consists of mid-elevation mountains with few perennial streams. The surface geology was created by the sandwiched ocean sediments during accretion events and intrusions of magma through those layers. Stiff flows of the Strawberry volcanics cover portions of this subecoregion. These events combine to create a surface geology consisting of a mix of colluvium, basalt, andesite, rhyolite, granite, partly metamorphosed limestone, marble, chert, argillite, shale, greywacke, serpentine, greenstone, and schist. Major vegetation associations are Western ponderosa pine forest and juniper steppe woodland. Vegetation includes ponderosa pine, Douglas-fir, subalpine fir, lodgepole pine, western larch, grand fir, grouse whortleberry, common snowberry, little prince's pine, sidebells, twinflower, pinegrass, elk sedge, and heartleaf arnica. Riparian areas are vegetated with gray alder, redosier dogwood, prickly currant, black currant, Columbia monkshood, and bluebells. This forested landscape is used for woodland grazing, wildlife habitat, and mining. Only limited logging occurs due to the difficulty in reforesting the droughty, exposed soils. Historic placer mining for gold has altered the structure of many streams.

Elevations range from 3,500 to 7,400 feet. The local relief varies from 600 to 3,400 feet. Mean annual precipitation ranges from 16 to 35 inches. Mean annual frost-free days range from 30 to 90.

The **Continental Zone Highland** consists of moderately dissected, mountainous volcanic plateaus. Mountain slopes are steep and scattered with cinder cones. Surface geology consists of colluvium and volcanic ash from the Strawberry Volcanics. Major vegetation associations are western ponderosa pine forest, grand fir/Douglas-fir forest, and sagebrush steppe/ponderosa pine. Vegetation includes Douglas-fir, grand fir, juniper, antelope bitterbrush, common snowberry, mountain-mahogany, mountain big sagebrush, stiff sagebrush, elk sedge, pinegrass, bluebunch wheatgrass, and Idaho fescue. This forested area has a xeric shrub or bunchgrass understory. These highlands are used for livestock grazing, logging, and recreation.

Elevations range from 4,000 to 6,700 feet. Local relief varies from 400 to 2,000 feet. Mean annual precipitation ranges from 16 to 30 inches. Mean annual frost-free days vary from 50 to 80.

The **Continental Zone Foothills** consist of hills and scattered buttes. A few perennial streams occur and originate in the surrounding mountain ranges. Much of the surface geology is basalt and ashflows from the Strawberry volcanics. Some of the Jurassic and Triassic greywacke, siltstone, and limestone are present across the foothills. Triassic layers consist of gabbro and metamorphic rock. Vegetation associations include sagebrush steppe/Bluebunch wheatgrass, mountain big sagebrush, Idaho fescue, Wyoming big sagebrush, Sandberg bluegrass, and, on schist, spiny greasewood. The shrub- and grass-covered land is utilized for livestock grazing and wildlife habitat.

Elevations range from 1,800 to 6,000 feet. Local relief varies from 200 to 2,500 feet. Mean annual precipitation ranges from 9 to 18 inches. Mean annual frost-free days vary from 50 to 140.



The **Mesic Forest Zone** is a dissected, volcanic plateau with some mid-elevation mountains. Intermittent headwater streams or perennial streams are fed by snow melt from adjacent mountains. Surface geology and bedrock includes basalt flows, volcanic ash and colluvium associated with Picture Gorge Basalts. The Mesic Forest Zone geology also includes some older areas of granite, sedimentary rock, volcanic and partly metamorphosed sedimentary and volcanic rocks. Major vegetation associations include grand fir/Douglas-fir forest. Cold slopes contain subalpine fir, Engelmann spruce, mountain hemlock, lodgepole pine, big huckleberry, grouse whortleberry, Utah honeysuckle, sidebells, round leaved violet, and northwestern sedge. Cool moist slopes exhibit grand fir, western larch, bride's bonnet, and little prince's pine. The vegetation on drier slopes includes Douglas-fir, ponderosa pine, mountain maple, ninebark, pinegrass, elk sedge, and largeleaf sandwort. This forested landscape is used for logging, woodland livestock grazing, wildlife habitat, and recreation.

Elevations range from 4,000 to 7,000 feet. Local relief varies from 400 to 2,500 feet. These areas are influenced by marine air coming through the Columbia River Gorge to the west. Mean annual precipitation ranges from 30 to 60 inches. This comes mostly in the form of snow and persists into late spring. Mean annual frost-free days vary from 15 to 70.

The **Subalpine-Alpine Zone** includes high elevation, glaciated mountains with arêtes, cirques, mountain slopes, tarns, permanent snowfields, and a remnant glacier. The high gradient streams have boulder and cobble substrates. Surface geology includes volcanic ash and colluvial deposits from the Strawberry Volcanics and Picture Gorge Basalts. Intrusive formations of basalt and andesite are the result of magma pushing up through layers of older rocks that changed the rocks as they cooled. Surface geology includes remnant glacial deposits associated with glaciers from glacial Lake Missoula, e.g., about 2 million years ago. The dominant vegetation associations are western spruce-fir forest and alpine meadows-barren. Common species include subalpine fir, whitebark pine, Engelmann spruce, and lodgepole pine. Dry south-facing slopes have mountain big sagebrush and Idaho fescue. Wet meadows contain heather and Parry's rush. The tree line is vegetated by krummholz. Alpine meadows are marked by greenleaf fescue and Hood's sedge. The highest elevations consist of rock outcrops, rubble land, and snowfields. This expanse of forest, meadowland, and rock is used for recreation and wildlife habitat. The land is used for summer livestock grazing. The Subalpine-Alpine Zone is an important water source for lower elevation areas.

Elevations range from 6,500 to 9,900 feet. Local relief varies from 600 to 3,000 feet. Mean annual precipitation ranges from 35 to 80 inches and is mostly snow. Mean annual frost-free days vary from 10 to 30.

The **Cold Basins** are cold, wet valleys and basins. Most streams have been channelized, but undisturbed reaches are meandering, with well developed floodplains. Surface geology consists of recent alluvium and lacustrine deposits. Older layers are formed from ash and sediment. The dominant vegetation associations are sagebrush steppe and wetlands. Common vegetation includes sedges, mountain big sagebrush, little sagebrush, and Idaho fescue. Wetlands and wet meadows are covered with tufted hairgrass, mountain rush, and nonnative Kentucky bluegrass. The pastureland, shrubland, grassland, and wetlands are heavily grazed by cattle and elk. Meadow hay is harvested for winter livestock feed.

Elevations range from 3,600 to 6,000 feet. Local relief is mostly level. Mean annual precipitation ranges from 12 to 25 inches and is mostly snow. Mean annual frost-free days vary from 20 to 50.



# Soils

## Factors in Soil Formation

Soils are defined by the processes that form them including climate, topography, parent material, and organisms living in the soil. In time, these processes form unique soil types that influence the kind and amount of vegetation growing on them.

Climatic influences are reflected by soil temperature and moisture. Dry (aridic) soils are found in areas with less than 12 inches average annual precipitation. The following three Columbia Plateau subcoregions (percent BLM ownership in parenthesis) are predominately dry: Deschutes/John Day Canyons (18%), Pleistocene Lake Basins (3%), and Umatilla Plateau (2%). Moist (xeric) soils are found in areas with more than 12 inches average annual precipitation. For the Blue Mountains Ecoregion, the following subcoregions are predominately moist: John Day/Clarno Uplands (61%), John Day/Clarno Highlands (12%), Melange (2%), and Continental Zone Highlands (2%). Moist areas are more resilient to disturbance and are easier to rehabilitate. Soil temperature is influenced by elevation. Warm (mesic) soils are found below 4,000 feet of elevation in the plan area, and on south aspects below 4,700 feet. These warm soils are located in all parts of the Columbia Plateau Ecoregion, and in the John Day/Clarno Uplands part of the Blue Mountains Ecoregion. Warm soils are differentiated from cooler soils by their longer growing season, reduced snow cover in the winter, and being more prone to annual weed invasion with disturbance. Cooler (frigid) soils are more resilient to disturbance and are found above 4,000 feet elevation and on north-facing slopes above 3,200 feet. Cool soils predominate in the following Blue Mountains subcoregion: John Day/Clarno Highlands, Melange, and Continental Zone Highlands.

Soil depth and effective moisture are influenced by topography and landform processes. Deep to very deep soils occur in alluvial drainages, on floodplains and river terraces of the John Day River, on north- and northeast-facing slopes influenced by leeward soil deposition from the prevailing winds, and on lower colluvial (rock fall) canyon and hill slopes formed from water and gravity deposition. Shallow and very shallow soils occur on flat basalt table lands, and on upland ridge top and shoulder slopes. Soils found on slopes over 12 percent with north and northeast aspects have increased effective moistures and cooler soil temperatures. Soils with slopes over 12 percent on south or southwest aspects conversely have decreased effective moistures and warmer soil temperatures.

The soils in the Columbia Plateau are formed from wind-deposited silt over thick deposits of basalt bedrock. The John Day Canyons have steeper slopes and a higher surface rock fragment content than the surrounding uplands and bottomlands. High rock fragment content helps protect the soil from erosion. The Columbia Plateau Ecoregion contains 23 percent of the BLM ownership in the plan area. Of the subcoregions within the Columbia Plateau Ecoregion, the majority of BLM ownership occurs in the Deschutes/John Day Canyons (18%) followed by the Pleistocene Lake Basins (3%), and Umatilla Plateau (2%). Soil detachment erodibility for the plan area is highest in the Pleistocene Lake Basins and Umatilla Plateau. The Pleistocene Lake Basins have the greatest percentage of sandy areas susceptible to soil blowing. Wind erosion is not a factor in the Umatilla Plateau or Deschutes/John Day Canyons. Hydric or wet soils are of minimal extent in this ecoregion. The Deschutes/John Day Canyons have the steepest mean slope percentage of the plan area, and is the reason for its high percentage of sensitive soils. On average for the plan area, the deepest soils are found in the Pleistocene Lake Basins and the shallowest soils are found in the Deschutes/John Day Canyons.

The soils in the Blue Mountains are derived from geologic types of mostly volcanic origin. The Blue Mountain Ecoregion contains 77 percent of the BLM ownership in the plan area. Of the subcoregions within the Blue Mountain Ecoregion, the majority of BLM ownership occurs in the John Day/Clarno Uplands (61%) followed by the John Day/Clarno Highlands (12%). The soil detachment erodibility is higher in the Highlands versus the Uplands. The Uplands contain a greater percentage of hydric or wet soils than the Highlands. Wind erodibility is not a major factor in either the Uplands or Highlands. The weighted average soil depth is 35 inches to restrictive layer for both the Uplands and Highlands.

Soils play an integral part in vegetation community development. Plant communities are most noticeably influenced by extremes in soil texture (clay versus sand), thickness of soil horizons, depth to restrictive layers (including abrupt soil texture boundaries), depth to water tables, and flooding or ponding frequency.



A functioning soil food web includes a diverse mix of arthropods, nematodes, protozoa, fungi, bacteria earthworms, biologic crusts, and in forests and woodlands, large wood in various stages of decay. It is the soil organisms that decompose and mix dead plant material and regulate the flow and storage of soil carbon and nutrients.

## Sensitive Soils and Disturbances

Sensitive soils are soils more vulnerable to soil productivity loss with disturbance. Soils in the planning area were modeled based on properties that make them more susceptible to site degradation. Highly erodible soils on steep slopes were classified as sensitive. Shallow soils with low available water capacity received a sensitive soil rating due to the soils limited ability to grow a protective vegetative cover. Map 3 in Chapter 2 shows planning area soil vulnerability to site degradation. Table 3-3 correlates the common soil associations with subcoregions and the percent of those subcoregions with sensitive soils. The dry/warm soils of the Pleistocene Lake Basins and Umatilla Plateau are also considered sensitive to disturbance due to their droughty characteristics.

Soil disturbance is often caused by timber harvest, wildfire, motorized and non-motorized recreational use, mining, livestock and wildlife grazing, and various mechanical vegetation treatments. These and other surface disturbing activities can decrease soil cover and contribute to decreased infiltration, increased erosion, increased top soil loss, and reduced soil productivity.

Within the planning area, regions of concentrated motorized vehicle use will exhibit static to downward trends in soil productivity due to increases in soil compaction, erosion and sedimentation. Soil productivity trends are static to improving in rangelands with good perennial grass cover, with shrub/tree canopy cover less than 10 percent, and with grazing systems that allow for vegetation (grass) recovery and rest. With increases in the density of forest and juniper stands, the potential for wildfire to damage soil productivity also increases.

**Table 3-3. Sensitive Soils by Soil Associations and Subcoregion.**

<b>Ecoregion</b>	<b>Subcoregion</b>	<b>Common Soil Associations (% of Subcoregion)</b>	<b>Percent of Subcoregion with Sensitive Soils</b>
<b>Columbia Plateau</b>	Umatilla Plateau	Ritzville-Walla Walla-Condon-Bakeoven (63%)	13%
	Pleistocene Lake Basins	Ritzville-Olex-Walla Walla-Roloff (51%)	13%
	Deschutes/John Day Canyons	Lickskillet-Wrentham-Rock outcrop-Bakeoven (81%)	61%
	Umatilla Dissected Uplands	Gwin-Waha-Simas-Gurdane (55%)	17%
<b>Blue Mountains</b>	John Day/Clarno Uplands	Simas-Tub-Waterbury-Gwin (51%)	27%
	John Day/Clarno Highlands	Klicker-Hankins-Tolo-Bocker (63%)	30%
	Maritime-Influenced Zone	Klicker-Tolo-Hall Ranch-Anatone (77%)	14%
	Melange	Tolo-Klicker-Helter-Anatone (50%)	54%
	Continental Zone Highlands	Klicker-Tolo-Hankins-Anatone (65%)	25%
	Continental Zone Foothills	Ateron-Menbo-Observation-Westbutte (54%)	24%
	Mesic Forest Zone	Helter-Klicker-Tolo-Ateron (54%)	44%
	Subalpine-Alpine Zone	Helter-Rock Outcrop-Klicker-Ateron (55%)	54%



## Unique Soil Resources

Hydric (wet) soils, prime agriculture land, and unique biological soil crusts are key soil resources in the planning area.

### Hydric Soils

Hydric soils constitute only a small portion of the planning area. Hydric soils are associated with riparian areas in poorly drained back waters, along floodplains, and in small spring seeps throughout the planning area. Soil mapping frequently excludes hydric soils because of the limited distribution and areal extent.

### Biologic Soil Crusts

Biologic soil crusts (BSC) are made up of tiny living plants and bacteria that grow together on the soil surface. They help keep the soil from washing or blowing away, fix nitrogen from the atmosphere into the soil, help keep out weeds, and promote the health of plant communities. In areas where BSCs have been lost, native vascular plants have been replaced by invasive species such as cheatgrass or medusahead.

The John Day Basin biological soil crust communities are unique. They are often more stable and more diverse than BSC communities in other parts of the west. A combination of relatively stable soils, moderate annual precipitation, and many sunny days allow these BSC communities to develop quickly and withstand disturbances. However, sandy or clayey soil conditions promote crusts that are less tolerant of disturbance than the crusts in loamy volcanic soils that dominate the basin.

A globally threatened species in biological soils crusts, *St. Jacob texosporium* lichen, is widespread in the basin. This species has become rare or has been extirpated from most of its Oregon, Washington, Idaho, and California range. This species is found in windy locations, such as ridgelines and hill tops. It occurs in both the loamy and sandy portions of the basin.

### Prime Farmland

For more than two decades, the State of Oregon has maintained a strong policy to protect farmland through “preservation of a maximum amount of the limited supply of agricultural land” (ORS 215.243). The acres of BLM land zoned as agricultural are shown in Table 3-4. Counties inventory agricultural land, designate it in their comprehensive plan, and adopt policies to preserve it. Lands zoned as Exclusive Farm Use (EFU) have restrictions designed to limit development that would conflict with agriculture. It keeps farmland from being divided into parcels too small for commercial agriculture.

Only 2,000 acres of the agricultural lands listed in Table 3-4 are considered prime farmland. Many of these lands are small parcels of fields managed by adjacent private landowners. Larger fields are leased for agricultural production, cooperatively managed to grow wildlife food and cover crops, or to grow perennial vegetation that does not require irrigation once established.

Prime farmland has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. It must also be available for these uses. It has the soil quality, growing season, and moisture supply needed to produce economically sustained high yields of crops when treated and managed according to acceptable farming methods, including water management. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air. Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding.



**Table 3-4. BLM Land Zoned as Agricultural.**

County	Zone	Acres
Gilliam		56,029
	Gilliam County AE Zone	56,029
Grant		124,648
	Multiple Use Range MUR40	120,758
	Primary Farm EFU20	3,769
	Primary Farm EFU40	121
	Primary Farm EFU80	0
Jefferson		22,940
	Rangeland Zone RL	22,940
Morrow		438
	EFU Zone	438
Sherman		37,960
	EFU F1 Zone	37,960
Wasco		26,006
	Wasco County A1-80 Zone	26,006
Wheeler		137,437
	EFU Zone	137,437

## Air Quality

Residents of the John Day Basin enjoy the benefits of generally good air quality, especially when compared to large urban areas (see EPA's AIR Data website <http://www.epa.gov/air/data/index.html>) for data. There are only a few large industrial emission sources in the planning area. Coupled with a low population, this typically means cleaner air. Air quality has been monitored in Umatilla County since 1997 and in Wasco County from 2001 through 2005. No exceedances of NAAQS have occurred in either county. As of 1999 (latest data available), there were 10 point sources of particulate matter within or adjacent to the planning area, of which the biggest emitter was the co-generation plant in Prairie City. Few or no days in any of the counties of the John Day Basin had an Air Quality Index that exceeded 100 (unhealthy air) in any of the past several years. During the summer and fall, smoke from wildfire and prescribed fires, occurring both within the planning area and drifting from outside sources, can create landscape haze. Most communities in the Blue Mountain Ecoregion unit are susceptible to inversions. The updated Oregon Smoke Management Plan does regulate prescribed burning on all forested lands across the state; however Oregon State law exempts rangeland and agricultural burning from regulation east of the Cascades (which includes all of the planning area). The Strawberry Mountain Wilderness is the only Class 1 area that is within the planning area. There are no non-attainment areas within 62 miles (100 kilometers) of the planning boundary. There is one air quality maintenance area located in La Grande which is 25 miles northeast of the planning area boundary.

Fuel types on BLM lands are generally lighter than those on Forest Service lands with shorter burn times. Smoke from prescribed fire is usually dissipated out of the area within a few days. Prevailing winds are from the Northwest in the summer months and would transport smoke to the southeast into mostly unpopulated areas.



# Climate Change

For a description of the existing climate in the planning area please see the “Ecoregions” section in Chapter 3.

Global mean surface temperatures have increased nearly 1.8°F (1.0°C) from 1890 to 2006 (Goddard Institute for Space Studies 2007). In the past decades, the Pacific Northwest regional climate has become warmer and wetter with reduced snowpack (Scientific Consensus Statement 2004). Research compiled by the Intergovernmental Panel on Climate Change (IPCC) suggests the average global surface temperature could rise 1 to 4.5°F in the next 50 years, with significant regional variation.

The National Academy of Sciences (2006) has confirmed these findings, but also indicated that there are uncertainties regarding how climate change may affect different regions. The Academy of Sciences reports that computer models indicate that such increases in temperature will not be equally distributed globally, but are likely to be accentuated at higher latitudes. Also, warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures are more likely than increases in daily maximum temperatures. Vulnerabilities to climate change depend considerably on specific geographic and social contexts. The climate trends presented here are general predictions, not results from scaled down climate models for the planning area.

Ongoing scientific research has identified “greenhouse gas” (GHG) emissions [including carbon dioxide (CO<sub>2</sub>); methane; nitrous oxide; water vapor; and several trace gasses] as potential contributors to global climate change. The IPCC (2007) recently reported that most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic (man-made) GHG concentrations. Through complex interactions on a regional and global scale, these GHG emissions cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the Earth back into space. Although GHG levels have varied for millennia (along with corresponding variations in climatic conditions), recent industrialization and burning of fossil carbon sources have caused CO<sub>2</sub> concentrations to increase dramatically and are likely to contribute to overall climatic changes.

Several activities occurring within the planning area may generate GHG emissions. Prescribed fires, timber harvest, livestock grazing and motorized recreation can generate carbon dioxide, methane, or other GHGs. See the Carbon Storage and GHG Emissions section in Chapters 3 and 4.

## Vegetation

Vegetation within the planning area is a product of the physical and climate properties associated with the subcoregions and modifications introduced by natural processes (including fire, insect infestations, disease, and floods) as well as human uses (such as grazing management, introduction of exotic species, farming, mining, fire suppression, and timber harvest). Map 4 in Chapter 2 displays the biophysical settings of the John Day Basin Planning Area.

The primary disturbance element has been wildfire. Occasional episodes of insect/disease epidemics and wind and moisture driven erosion have also formed the vegetation patterns across the John Day Basin. Climatic variations and associated disturbance elements created a landscape of vegetative conditions that varied within a range referred to as a Historic Range of Variability (HRV). Sagebrush and juniper dot the slopes, grass lines the valleys, and pine forests ring mountain peaks. Lush green vegetation trims the many streams, rivers and springs in the planning area. Along the plateaus, swaths of wheat fields alternate with remnant grasslands. Spring wildflowers of lupine, balsamroot, and paintbrush create brilliant displays of purple, yellow, and red.

## Riparian Vegetation

Riparian vegetation occurs along the margins of streams, ditches, springs, seeps, and seasonally ponded soils in the planning area. The structure and type of vegetation is critical to wildlife and fish, even when it does not control stream condition and function as discussed in the “Stream Channels and Floodplains” section.



Hardwoods such as aspen, some taller willows, and cottonwood supply vertical structure for neotropical birds. As the trees age and decay, cavity nesters make use of them. Vegetation also supplies shade to the stream and helps to reduce heating of the water. Leaves from hardwoods supply nutrients to the riparian and aquatic system. In some areas, these leaves can be the driving force as a food source for aquatic macro invertebrates and therefore for the native fish.

Riparian areas and associated vegetation continuously evolve. Lakes and ponds gradually fill with sediments, and rivers and stream channels move about within the valley floor. Vegetation types gradually develop to fit the newly created environments associated with movement of the stream, its soil and water features. Stable plant communities are short lived, except in armored bedrock or low gradient meadows. Vegetation units within riparian areas are constantly moving or swapping their community types.

Riparian areas in the planning area occur as deciduous stands of trees and shrubs including a mosaic of herbaceous species that occur along the riparian margin. These woodlands and shrublands require periodic flooding and bare, moist substrates for reestablishment. Low-elevation canyons and draws contain shade intolerant shrubs on higher gradient cobble streams. On reaches with developed floodplains and finer soils, sedges and rushes line the stream banks. In higher elevation steep-sided canyons or in narrow V-shaped valleys a mix of birch, alder, willow, and dogwood form thickets. Sites are subject to temporary flooding during spring runoff. In interrupted reaches, underlying gravels may keep the water table just below the ground surface and are favored substrates for establishment of cottonwoods.

Some of the most common riparian/wetland plant associations include sandbar or coyote willow, broadleaf cattail, American speedwell, creeping spike, chairmaker's bulrush, reed canarygrass, naked sedge, basin wildrye, netleaf hackberry-Lewis' mockorange, alder/dogwood, peachleaf willow, and mountain rush. Brief descriptions of these associations, with photos, are displayed below.

*Salix exigua* (Sandbar or coyote willow) association is a tall shrub community found across much of the western United States and is common in the planning area. In the Blue Mountains, this association occurs on gravelly or cobbly alluvial bars and banks along streams with a sequence of pools and riffles. Sites frequently contain deep fine textured soils overlaying cobble gravels. Between the willows grows a patchy herbaceous layer with reed canarygrass, quackgrass, bentgrasses, and stinging nettle or thistles. This type frequently appears between a streamside grass or rush community and various more stable or drier shrub riparian type.

**Figure 3-5. Coyote willow on Bridge Creek.**



**Figure 3-6. *Typha latifolia* (Broadleaf cattail).**



Broadleaf cattail is a wide spread association. It occurs on cobbly and/or gravelly alluvial bars or developing floodplains. It is typically found adjacent to pool/ riffle sequence streams and recovering incised stream channels. This association is found at permanently or semi-permanently flooded sites at the edges of lakes and ponds and in ditches, oxbows and backwater areas.



The American speedwell association is found mostly in streams on channel shelves (alluvial bars parallel to the banks of a stream) in extremely shallow, gentle gradient sections of faster-moving streams.

**Figure 3-8. Layering of creeping spike rush, 3-square full rush up to cocklebur on the main stem John Day River.**



Reed canarygrass grows in open areas and on more developed soils of floodplains. It is extremely aggressive and often forms persistent, monocultures in wetlands and riparian areas. Infestations threaten the diversity of these areas, since the plant chokes out native plants and grows too densely to provide adequate cover for small mammals and waterfowl. Once established, reed canarygrass is difficult to control because it spreads rapidly by rhizomes (Washington State Department of Ecology).

**Figure 3-10. Naked sedge near Burnt Ranch on the John Day River.**



**Figure 3-7. The American speedwell.**



Gary A. Monroe @ USDA-NRCS PLANTS Database

Along the main stem John Day River and other major tributaries, a community of common spikerush and chairmaker's bulrush lines the banks and shifts in relative dominance. This association occurs along the low water line with coyote willow, and reed canarygrass along elevations corresponding to higher riverflow levels. Cocklebur grows among the willows and in sandy deposits near bankfull.

**Figure 3-9. Reed canarygrass.**



Gary A. Monroe @ USDA-NRCS PLANTS Database

Naked sedge association is abundant along all the forks of the John Day River. Naked sedge plants are scattered along the lower John Day River but rarely form large groups. Sites are bouldery stream banks and narrow alluvial bars adjacent to the banks of streams with well developed point bars. Asters, field mint, tomcat clover, field horsetail, and fringed willowherb are scattered at low abundance among the boulders. The sedge plants grow on top of boulders with their root masses sitting in the stream most of the growing season.



Great Basin wildrye association is commonly found in swales and at the base of alluvial fans and toeslopes in lower precipitation zones. Soils are generally deep and fine-textured and have moderate water holding capacity. Sites are moist to wet in the spring and moist to dry by midsummer. Great Basin wildrye dominates the site. Other herbaceous species and occasionally shrubs are minimal.

Netleaf hackberry-Lewis' mockorange association is found at low elevations along stream banks and high floodplains in high gradient, narrow with moderate side slopes. This association grows in soils with high coarse fragment contents. Netleaf hackberry forms a scattered to dense tall shrub layer. Lewis' mockorange is a codominant feature. Blue elder and oceanspray occasionally occur alongside the hackberry and mock orange. In the planning area, this association occurs along streams and rivers and where talus slopes meet the river.

White alder/redosier dogwood association occurs mainly on the lower elevation streams of the Blue Mountains Ecoregion and sporadically in the Columbia Basin Ecoregion. Sites are stream banks and floodplains along cobbly pool/riffle streams. Valleys are north-facing, moderate gradient, narrow with moderately steep side slopes. This association is probably the result of a disturbance event such as intense flooding. White alder may form an open to dense canopy over red-osier dogwood, netleaf hackberry and Lewis' mockorange. Other shrubs may occur, including common chokecherry, elderberry, cascara, Woods' rose and currants. Herbaceous species are sparse. Upland vegetation types adjacent to sites are side slopes of sagebrush steppe, Idaho fescue, and bluebunch wheatgrass.

**Figure 3-11. White alder in Pine Hollow.**



**Figure 3-12. Mountain alder/redosier dogwood association on Deer Creek.**



Mountain alder/redosier dogwood association is found at moderate elevations in the Blue Mountains Ecoregion. It occurs in V-, box-, or trough-shaped valleys with moderate gradients. It grows on stream banks, alluvial bars, and floodplains. Soils are shallow, skeletal, mineral alluvium over water-worked gravel and cobbles that remains wet throughout the growing season. In the planning area, this association occurs at higher elevations than the White alder association. This community is a closed canopy with an 8- to 10-foot tall shrub thicket of mountain alder and red osier dogwood. Either shrub can be dominant but both always contribute significantly to total cover. Mountain alder can appear as a tree above the redosier dogwood in some areas. This association usually contains a shorter, sparse shrub layer of Woods' rose and golden currant with white clematis draped among the branches.

Peachleaf willow association occurs on open sites with little shade. The understory consists of white clematis and patches of smooth brome and common horsetail. Peachleaf willow is a rapidly growing, short-lived medium-sized deciduous tree that is typically from 20 to 40 feet tall. Peachleaf willow is an early successional species that pioneers floodplain alluvium. Peachleaf willow is found along the lower reaches of the South Fork John Day and in rangeland streams.

The mountain rush association is widespread. It is found at moderate elevations in moderately wide, low gradient, trough- and flat-shaped valleys with gentle to moderate side slopes. Sites are dry to wet basins, floodplains, and springs. Most of the soils are fine textured and have high water-holding capacity. This association occurs in lower gradient, depositional reaches of the planning area streams. Most sites are flooded during the spring and early summer. The water table drops late in the growing season. Mountain rush cover ranges from



20 to 99%. Other herbaceous species found in this association include Woolly sedge, Nebraska sedge, and slenderbeak sedge. This is a common association in the lower gradient reaches of tributaries in the North Fork John Day planning area.

## Riparian Key Features

Aspen and cottonwood forest woodlands historically occur across large portions of the planning area. Historic photos near Dayville and at Clarno show large riparian forests that have vanished. Major causes of the decline of black cottonwood stands in eastern Oregon include: conversion of stands for pasture, farmland, or urbanization; conversion of streams from multiple to single channel systems; and restriction of lateral movement of streams across floodplains. Over browsing by livestock, elk, and deer, reduced fire frequency, and logging for firewood have also had impacts.

Cottonwood deserves special consideration in the discussion of riparian vegetation. Many cottonwood stands have declined in the area. Streamside black cottonwoods contribute to favorable aquatic habitat by providing stream bank stability and reduced siltation, maintaining low water temperatures through shading, increasing debris recruitment for variable stream habitats, and providing nutrient-rich litter for aquatic food webs. Black cottonwood is an important source of cover for wildlife and livestock.

Along BLM streams in the Middle and North Fork subbasin, 11 small segments were found to contain an occasional relic cottonwood tree: Matlock, Stony, Rush, West Fork Boneyard, Cabin, Ditch, Squaw, Graves, Mallory, unnamed tributary to Mallory, and an unnamed tributary to Little Wall Creek from the east. The South Fork John Day River drainage has relic areas of aspen and cottonwood communities along the main stem. Relic areas on the tributaries are being encroached by surrounding conifers. In the lower subbasin, relic areas are scattered and include portions on Long Hollow and Hay Creek. Native cottonwood stock is grown at Clarno. Outplantings have been successful along tributaries such as Bridge Creek and along the main stem John Day River near Clarno.

Generally, aspen occupy moderate, mid-elevation slopes as small, scattered stands in the mixed conifers of Douglas-fir and ponderosa pine (3,000 to 5,000 feet). A few aspen woodlands appear in riparian zones at lower elevations. On BLM managed public land in the Middle and North Fork Subbasin, aspen was found on only three small tributaries (west fork of Boneyard Canyon, No Name Creek and south tributary to Little Wall Creek). The aspen had stunted growth or were dying, and occurred on small alluvial valleys or on the edges of down cutting meadows. None of the stream reaches containing aspen are functioning hydrologically (see Hydrology section), and few are showing any signs of improvement.

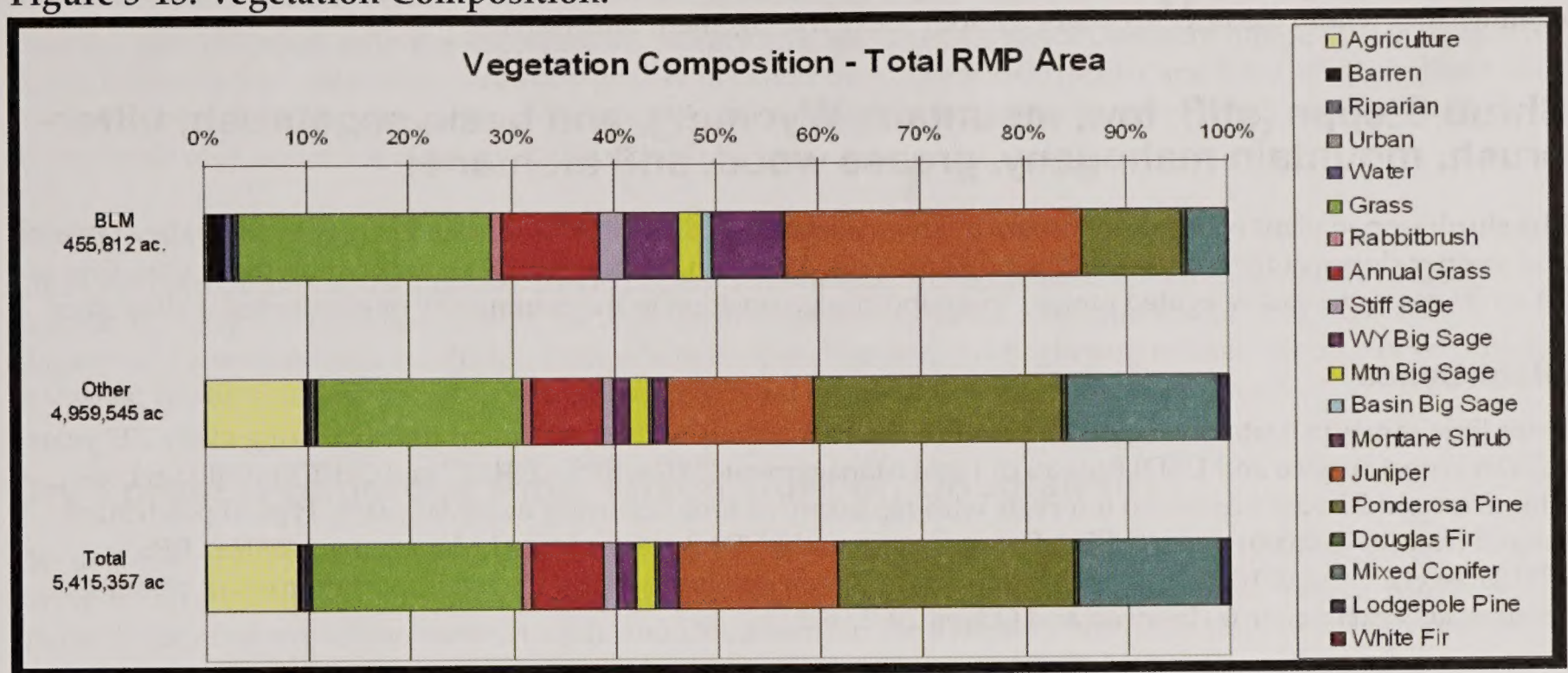
## Terrestrial Vegetation

Terrestrial vegetation within the planning area reflects a range of conditions represented by the many subcoregions within the planning area. The following text describes the primary non-riparian vegetation communities found within the planning area. In 2006 and 2007, the Prineville District mapped existing and potential vegetation respectively across the nearly 5.5 million acres within the planning area. Existing vegetation was mapped using 2004 and 2005 remote sensing data, plot data—including forest inventory data (Vidourek, 2005, and local knowledge). Potential vegetation was mapped using data sets from Landfire, Ecological Site Inventory (ESI), soils, vegetation plots, and local knowledge. Vegetative community descriptions are based on Landfire Biophysical (BpS) descriptions. Biophysical descriptions identify a range of seral structural conditions that can occur on a site based on environmental and disturbance factors. Appendix E provides summary descriptions of applicable BpSs. A complete BpS description is available on the Landfire web page or upon request from the Prineville District Office.

Figure 3-13, Vegetation Composition, displays existing proportions of major vegetation groups within the planning area. Percent compositions are for lands managed by the BLM and lands owned/managed by private owners or other government agencies. Of note is the larger percentage of BLM land with riparian, shrub species, and juniper habitats. Other land ownerships have higher percentages of agriculture (private) and forest species (primarily Forest Service). Because the BLM manages less than 10 percent of the planning area, the proportions of



Figure 3-13. Vegetation Composition.



the groups managed by the BLM barely influences the proportions for the entire planning area. Vegetation conditions and trends by major plant communities will be addressed in more detail below.

Appendix F compares existing seral structural conditions to site potential identified in the appropriate BpSs. Vegetation conditions and trends by major plant communities will be addressed in more detail below.

## Grasslands (including Palouse Prairie)

The Columbia Plateau Ecoregion of northeastern Oregon and southeastern Washington is an elevated plateau containing considerable area of open palouse grassland that remains unfarmed because of thin soils and a short growing season. North-central Oregon has the largest area of remaining true palouse prairie (Holechek *et al.* 1989, p. 87).

### Disturbance

The fire return interval for sagebrush and bunch grass is estimated at 25 years. The native bunchgrass habitat apparently lacked extensive herds of large grazing and browsing animals until the later 1800s. Burrowing animals and their predators likely played important roles in creating small-scale patch patterns (Johnson and O'Neil 2001, p. 49). Typical patch sizes were large with maximum fire sizes of 10,000 acres and an average of 1,000 acres (USDA Forest Service and USDI Bureau of Land Management 2007a. BPS 081142).

### Conditions/Influences

The Palouse Prairie, also referred to as the northwest bunchgrass prairie, has had the highest percentage conversion into farmland of all western range types. The Palouse is one of the most endangered ecosystems in the U.S. with only 1% of the original habitat remaining; it is highly fragmented with most sites <10 acres (Johnson and O'Neil 2001, p. 49). Today it is used primarily for wheat production (Holechek *et al.* 1989, p. 87). Bluebunch wheatgrass and Idaho fescue, the two primary bunch grasses in this type are decreasing under heavy grazing pressure. Additionally, historic over-grazing and the increase of nonnative annual grasses such as cheatgrass and medusahead have altered fire return intervals and effects. The majority of the agriculture displayed in Figure 3-13 is within the Palouse Prairie.

### Trend

Since 1900, most of the Palouse grasslands (94%) have been converted to crop, hay, or pasture lands (see Map 18: Key Vegetation Elements) (Johnson and O'Neil 2001, p. 491). Over-grazing and expansion of nonnative annual grasses and noxious weeds will continue to be a management concern. Early seral communities dominated by



nonnative annual grass stands are in a relatively stable state. These sites are not expected to return to native communities within the next 50+ years without active management intervention.

## **Shrub Steppe (stiff, low, mountain, Wyoming, and basin sagebrush, bitterbrush, mountain mahogany, grease wood, and montane)**

The shrub steppe plant community occurs in lower elevations of the Blue Mountain Ecoregion and valley terraces and steeper slopes of the Columbia Plateau Ecoregion. Although western juniper can occur on these sites, fires at 10- to 20-year intervals relegated juniper to a subordinate position in the community or eliminated it altogether.

### **Disturbance**

Drier little sagebrush sites averaged 87-year fire return intervals with replacement fires occurring every 227 years (USDA Forest Service and USDI Bureau of Land Management 2007a, BPS – 081127 and 091079). Tall sagebrush sites averaged 20-year fire return intervals with replacement fires occurring every 90 years. Typical patch sizes ranged from 10 to 2,000+ acres (USDA Forest Service and USDI Bureau of Land Management 2007a., BPS – 091125, 081125, and 081080). Burrowing animals and their predators likely played important roles in creating small-scale patch patterns (Johnson and O'Neil 2001, p. 51).

### **Conditions/Influences**

Shrub steppe communities were historically a small component of the Columbia Plateau Ecoregion. Patch sizes were smaller and typically tied to micro sites with Wyoming and Mountain sagebrush found on slopes and benches with deeper soils and low and ridged sagebrush on shallower rocky soils. Shrub steppe communities in the Blue Mountain Ecoregion were more extensive. The combination of fire control and historic grazing management has allowed juniper expansion and reduced the quantity and vigor of understory species. Many of these sites have been invaded by nonnative annual grasses or noxious weeds.

### **Trend**

Quigley and Arbelbide (1997) concluded that Big Sagebrush and Mountain Sagebrush cover types are significantly smaller in area than before 1900, and that bitterbrush/bluebunch wheatgrass cover types are similar to the pre-1900 extent. More than half of the Pacific Northwest shrub steppe habitat community types listed in the National Vegetation Classification are considered imperiled or critically imperiled (Johnson and O'Neil 2001, p. 51). Without active management or a change in fire control standards, juniper expansion is expected to continue to invade these communities and decrease the shrub and grass components.

Numerous areas have been converted to annual grass dominated sites (Map 18) with expected trends the same as those in the Palouse Prairie described above.

## **Western Juniper Steppe Woodland**

Western juniper steppe is predominantly found in the Blue Mountain Ecoregion and drainages (particularly north aspects) of the Columbia River Ecoregion.

### **Disturbance**

The presence of old growth stands of western juniper on rocky ridges and along small stream channels is probably a function of the protection afforded by those sites (Burkhardt and Tisdale 1976). Old growth juniper typically exhibits the following characteristics: flattened, rounded or uneven top; dead branches; bark missing; covered by light green lichen; thick fibrous bark with well developed furrows; large branches near the base; and leader growth in the upper ¼ of the tree usually > 1 inch. Growth form and morphological characteristics vary across trees and stands so usually several characteristics are required to separate young and old trees (Miller *et al.* 2005, p. 12). Typical patch sizes ranged from 100 to 10,000 acres (USDA Forest Service and USDI Bureau of Land Management 2007a., BPS – 091017). Map 18 displays "old growth" potential and current juniper population extent.



## Conditions/Influences

Over the past 150 years, with fire suppression, overgrazing, and climatic factors, western juniper has increased its range. Inland, woodlands are significantly greater in extent than before 1900 (Miller and Rose 1999). As these sites become dominated by juniper, understory species cannot thrive. In their absence natural fire can burn through these stands only under the most severe conditions.

## Trend

Given the current fire control policies, it is expected that without active intervention juniper will continue to expand. The majority of juniper within the analysis area became established within the last 100 years. The majority of these stands are reaching a state where juniper dominance is beginning to alter understory conditions. In the last 10 years private landowners and the BLM have begun to control juniper densities.

## Dry Forest (Ponderosa Pine, Mixed Conifer, Douglas-fir)

The majority of forest vegetation occurs within the Dry Forest vegetation group (receives 12-17 inches of precipitation annually). Dry forests are defined as forests that were historically open and supported widely spaced large ponderosa pine, western larch, and Douglas-fir in the overstory with little underbrush and only occasional clumps of smaller trees. These plant communities occur primarily in higher elevations and drainages of the Blue Mountain Ecoregion.

## Disturbance

The mean fire interval ranges from 48 years in drier pine sites, 6 years in moister pine sites, and 20 years in mixed conifer sites with replacement fires in all groups occurring in the 130-year range (USDA Forest Service and USDI Bureau of Land Management 2007b., BPS – 081053x, 081053m, and 081045). Insects and disease created small openings and altered stand structure with some agents targeting overstory trees and others thinning understory trees. Typical patch sizes: Small openings (<2 acres) emulate spots created by low intensity fire, root rot, pockets, or insect disturbances.

## Conditions/Influences

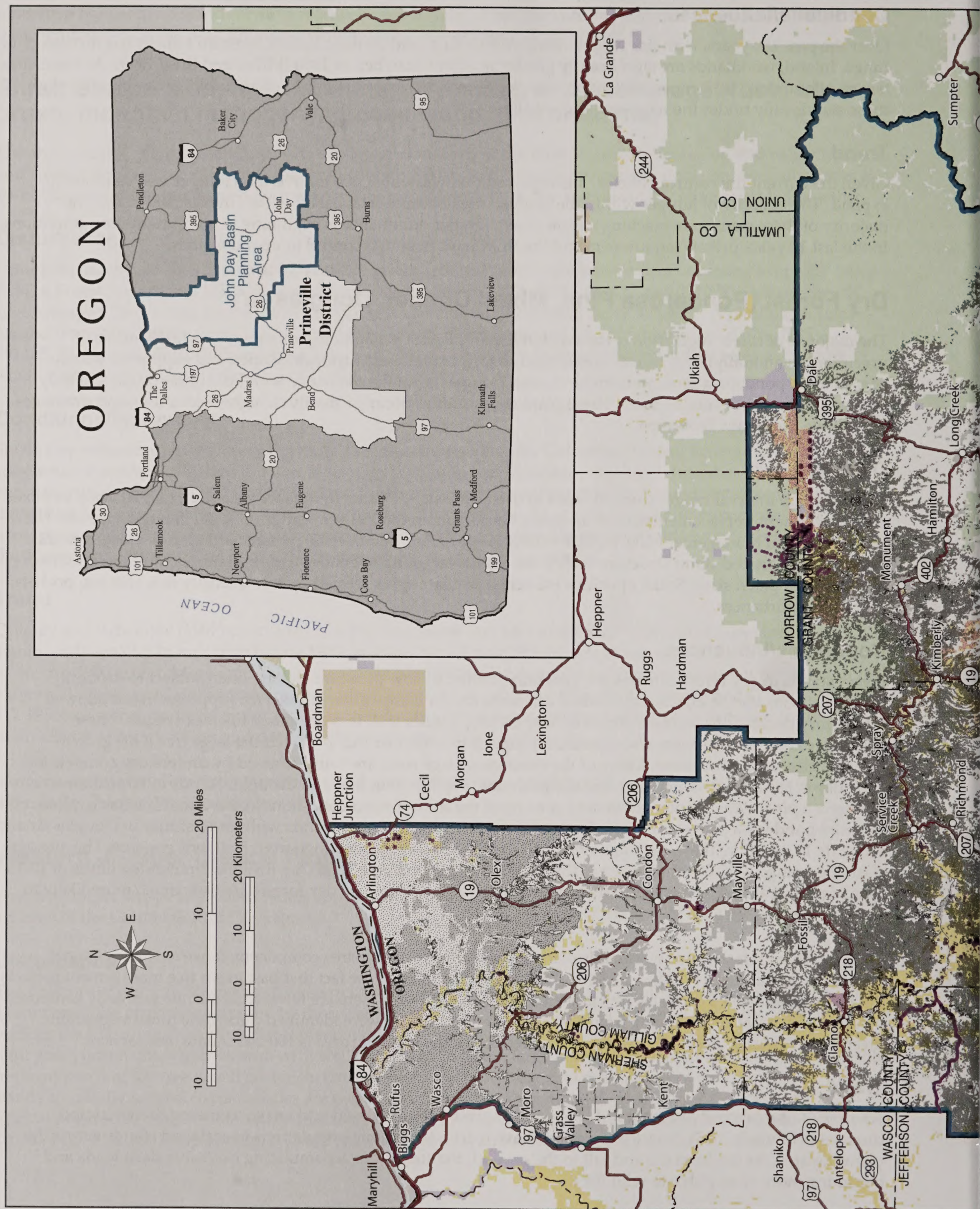
Forest stands in dry forest climates are generally limited by low moisture and are often subject to drought. Dry forests can also be affected by limited nutrients and/or competition stress. Fire suppression has allowed understory densities to increase with a corresponding species shift to more shade tolerant species. These vegetative communities were also historically logged in a manner that removed the large tree (Old growth tree, see glossary) component. Many of the remaining large trees are being stressed by understory competition and subject to higher risk of insect and disease, stand replacement fire, and drought. Stands of large diameter ponderosa pine with an open understory are one of the most limited conditions in the Columbia Basin. Many of the pure ponderosa pine stands have been converted to mixed conifer stands with understories of Douglas-fir and white fir. In addition, the vegetation inventory shows that slash loads range from 5-80 tons per acre. The average slash load range is 20-30 tons per acre. This is much higher than the John Day RMP recommended limits of 12-15 tons per acre. "With heavy ground fuels and high tree densities, these dry forests are now much more likely to have severe fires" (USDA FS Science Update 2002, p. 5).

The majority of forest stands within this planning area contain a large tree component; however stands are not dominated by large trees (Vidourek 2005). This can be attributed to the fact that past green tree management projects did not remove 30-50% of the healthy large trees on site. However, there are few stands that are primarily composed of large trees. Basal areas ranging from 80-400 square feet per acre were identified during the forest vegetation inventory (Vidourek 2005). The average basal area across the planning area is 160-200 square feet per acre.

## Trend

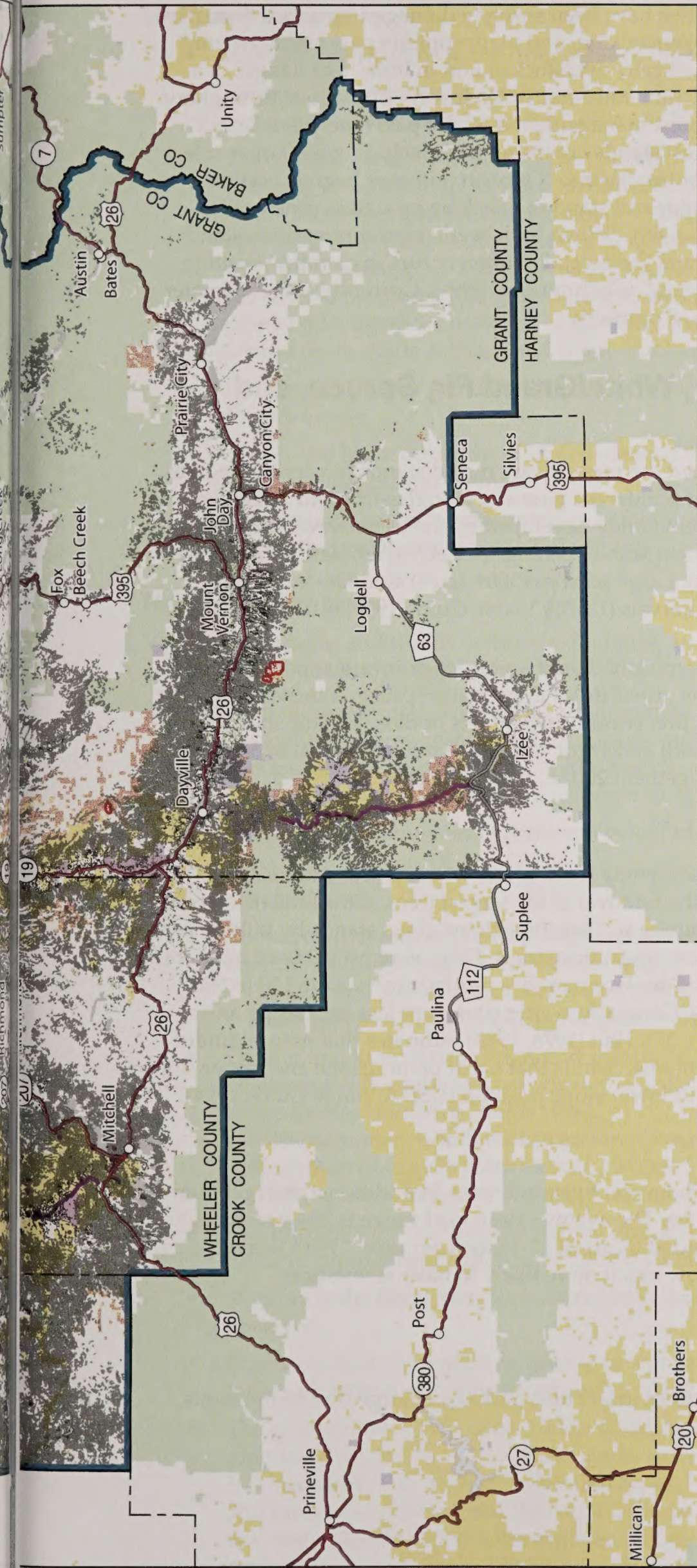
As a result of this trend of high basal areas, trees have become stressed and are succumbing to insects and diseases (Vidourek 2005). Insect populations have reached epidemic populations in scattered stands across the planning area. As the trees die and fall to the ground, the stands are accumulating excessive slash loads and becoming more susceptible to wild fires.





Map 18: Key Vegetation Elements





Map 18: Key Vegetation Elements

## LEGEND

Large Structure Trees  
Known Weed Location  
(incomplete coverage)

Forested

Potential for Old Growth Juniper

Juniper Expansion

Agriculture

Greater than 25% Annual Grass

Planning Area Boundary

### Administered Land

Bureau of Land Management

Forest Service

John Day Fossil Beds  
National Monument

Other Federal

State

Private or Other

U.S. DEPARTMENT OF THE INTERIOR  
Bureau of Land Management



## PRINEVILLE DISTRICT

### John Day Basin Proposed Resource Management Plan Final Environmental Impact Statement

2012

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Map 18: Key Vegetation Elements



"A large number of mixed conifer stands in the Blue Mountains have been severely damaged by a variety of insects and diseases, compounded by protracted drought, overstocking, and inappropriate past management." "Additionally, large areas in the ponderosa pine type are drastically overstocked and in imminent danger of a bark beetle population buildup and resultant epidemic" (Schmitt and Scott 1993). Insect populations throughout the planning area are spreading each year. Due to passive forest management over the past nine years, insect disturbances are being left unchecked. As a result, many forest stands are losing trees including the larger size trees that were left for seed sources during past management treatments. "Once an outbreak begins, beetles select the largest trees in a stand. The natural resistance of trees and stand to attack by mountain pine beetles decreases as age and competition increase" (Gast *et al.* 1991, p. 46). "When bark beetle mortality reduces stand density in unthinned stands, some of the best trees are lost, and the mortality often occurs in clumps, resulting in uneven distribution of growing space among remaining trees" (Cochran *et al.* 1999). Currently, large diameter components of these communities are at high risk of increased mortality.

## **Moist Forest (Mixed Conifer, Douglas-fir, White/Grand Fir, Spruce, and Lodgepole Pine)**

Some of the forest stands are pure or single species stands, but the majority are mixed stands to varying degrees. In general these communities occur in large stands; however ponderosa pine and Douglas-fir occur as isolates and stringers associated with drainages. The Viable Ecosystem Guide developed by the Ochoco NF recommends forest stands that are contiguous and at least 1,000 acres in size. Small openings (< 2 acres) emulate spots created by low intensity fire, root rot, pockets, or insect disturbances. Large patches (500+ acres) simulate large stand replacement fires. These openings occurred at 70-200 year intervals (USDA Viable Guide 1994, p. 47 and 31).

Lodgepole Pine – The ecological status of lodgepole pine is typically that of a pioneer or invader species and is normally seral to other tree species such as ponderosa pine grand fir, or Engelmann spruce. It thrives on disturbance and can establish quickly in an area ravaged by fire, windthrow, insects or disease. This short-lived species is dependent on disturbance for its regeneration, health and vigor with a fire return interval of 80 to 100 years (USDA Forest Service and USDI Bureau of Land Management 2007a., BPS – 091050).

### **Disturbance**

In moister areas, including riparian associations, stand densities may reach levels where insect and disease episodes had localized effects to stand dynamics including the removal of the largest trees. Dwarf mistletoe could be significant in those stands where their host species are abundant. Dwarf mistletoe alters stands by killing heavily infected overstory and restricting development of host understory trees. Fires were probably of moderate frequency (30-100 years) in presettlement times. Typical stand-replacement fire-return intervals are 150 to 500 years with moderate severity-fire intervals of 50 to 100 years. Generally, wetter sites burn less frequently and stands are older than drier sites (Johnson and O'Neil 2001, p. 33). Hall (1976, 1980) estimates that natural under burns occurred every 10 years in drier sites of the Blue Mountains. Stands that occur on midslope and upper slope positions had more frequent fires than stands in a toe slope or lower slope position (USDA Viable Guide 1994).

### **Conditions/Influences**

The majority of these communities are overstocked with high levels of ground fuels. In addition, the vegetation inventory shows that slash loads range from 5-80 tons per acre. The average slash load range is 20-30 tons per acre. This is much higher than the John Day RMP recommended limits of 12-15 tons per acre. "With heavy ground fuels and high tree densities, these dry forests are now much more likely to have severe fires" (USDA FS Science Update 2002, p. 5).

### **Trend**

Many of these stands have a high risk of stand replacement fires, insect loss, and loss of large tree components due to competition stress.



## Unique Features

- Riparian associations in the drier areas of the Columbia Ecoregion provide unique diversity.
- Palouse Prairie communities in the Lower John Day provide key habitats for sensitive species and are some of the last remaining in the Columbia Basin.
- Two unique areas exist for the forest vegetation. Both contain the oldest and largest trees within the planning area (see Map 18). One is located in Timber Basin (less than 500 acres) at the south base of Rudio Mountain and the other is isolated near the north face of Aldrich Mountain (Big Canyon Creek—approximately 1,100+ acres). The Timber Basin size was reduced significantly by the Timber Basin wildfire in August 2000. Both areas are similar and are the closest resemblance of a stand exhibiting some old multi-story forest (old growth forest, see Glossary) characteristics. They have some trees (ponderosa pine and Douglas-fir) in excess of 40 inches dbh in the overstory and both have an understory of mixed conifer (both shade-tolerant and shade-intolerant).
- Old growth juniper stands associated with rocky rims along the main stem of the John Day River north of Picture Gorge.
- Aspen and black cottonwood stands associated with the main stem, North Fork, and South Fork John Day River, drainages, and springs.
- Western Larch communities require a unique set of disturbance conditions to become established. Currently, population levels are declining.

## Regional Context

Vegetation patterns and trends within the planning area are generally consistent with findings in ICBEMP (Jones and Hann 1996) and other regional reviews which included:

- Overall, more forest cover types are dominated by shade-tolerant species that are generally more susceptible to fires, insects and pathogens; and fewer forest cover types dominated by shade-intolerant species that are more resistant to fire, insects, and pathogens.
  - Significant increases of grand fir/white fir, and Interior Douglas-fir were observed.
- The large tree component is believed below historic levels in the ICBMP area.
- Pole-sized seral/structural stages are found in greater abundance than at any time during the last several hundred years.
- There are increases of the croplands and grand fir/white fir cover types, and declines of the fescue bunchgrass and Interior ponderosa pine types.
  - Agricultural conversion of 46 percent of the big sagebrush, 79 percent of the Agropyron bunchgrass, and 91 percent of the fescue bunchgrass cover types.
- Conifer and juniper expansion into shrubland habitats was the predominant factor responsible within 46 percent of the subbasins in which the upland woodland community type occurred above its historical range (Jones, Hessburg, Smith 1996).
  - Western juniper woodlands in eastern Oregon with more than 10 percent canopy cover increased from 456,000 acres in 1936 (Cowlin *et al.* 1942) to 2.2 million acres in 1988 (Gedney *et al.* 1999). In much of its range, western juniper occupies 10 times the area it did 130 years ago (Miller *et al.* 1999).
- The introduction of European annual grasses has drastically altered disturbance regimes, moisture and nutrient capture capabilities, and habitat suitability.
- Significant declining trends of cottonwood/willow, interior ponderosa pine, and western larch were observed.
- Fragmentation of landscape patterns of subwatersheds within the Blue Mountains and Columbia Plateau increased between historical and current periods.
- The greatest fire regime changes are associated with the dry forest vegetation types, such as ponderosa pine and Douglas-fir, and in shrub lands, such as mountain big sagebrush and big sagebrush. Fire severity has increased in all of these vegetation types. Fires have become less frequent (due to fire suppression) and more severe. Non-lethal fire regimes have become mixed-severity (a combination of stand-replacing and non-lethal fire effects) fire regimes, and mixed severity fire regimes have become increasingly stand-replacement fire regimes. Mixed-severity and stand-replacement fire regimes are extensive.



## Special Status Plants

Special status plants include those species listed by BLM as “Sensitive” (BLM OSO 2007) as well as plants listed by either the federal or state governments as “endangered” or “threatened” (Oregon Natural Heritage Information Center, 2007). Plants so designated include species that are rare or uncommon, and face possible extinction or endangerment throughout all or a significant portion of their range (or within the State of Oregon), and for which special consideration and/or management is needed.

Appendix D lists special status plants documented or suspected within the planning area. There are no federally listed Endangered or Threatened plants known or suspected within the planning area. On July 19, 2011, the U.S. Fish and Wildlife Service announced that federal listing of whitebark pine (*Pinus albicaulis*) is warranted, but precluded by higher listing priorities. Populations of whitebark pine exist on surrounding Forest Service lands but have not been documented on BLM lands.

These plants occupy small, usually isolated and scattered sites across the planning area, although three main locales have a greater site density: the South Fork of the John Day River, BLM lands between Service Creek and Kimberly; and the Sutton Mountain area. Table 3-5 shows acreage by species, as mapped in GIS.

Of the three species known to occur on BLM lands within the planning area, two (transparent milkvetch and arrow-leaf thelypody) are endemic to the John Day Basin and the BLM plays an important part in their conservation. Oregon sites of the dwarf suncup, known also from eastern Washington and Idaho, are found predominantly in the John Day Basin as well.

Special status plant sites on BLM lands in the John Day Basin planning area are generally in stable condition. Of the 69 sites above, 68% are stable, 10% are in downward trend, 3% are in an upward trend and for 19%, the trend has not been determined. Assessment is accomplished through periodic monitoring visits which include counts of plants on site and a qualitative evaluation of their vigor, reproductive status and apparent threats.

Isolated downward trends appear to be the result of natural causes, such as long-term drought, soil slippage and flooding. Unless determined to be caused by natural phenomena, downward trends may be corrected through changes in management. Some examples of this could be implementing a change in livestock use, closures of roads and/or trails, removal of competing vegetation, weed control, fire treatment, and similar management prescriptions.

Only one site, for which there is an apparent downward trend, requires a change in the management of the site, and this is related to the need for a small, site-specific livestock exclusion fence.

Due to the inaccessible and/or inhospitable habitat occupied by the dwarf suncup and transparent milkvetch, it is unlikely these species have ever been more numerous or in better condition than they are today. However, the arrow-leaf thelypody occupies riparian and related habitat, much of which has been altered since European settlement. Remaining sites are mostly in areas relatively inaccessible to livestock and it is likely there is suitable habitat that remains unoccupied for unknown reasons.

Of those species listed in Appendix D, only Laurence’s milkvetch is likely to have occurred on BLM land within the John Day Basin and has since been extirpated from public lands. Sightings have not been recorded since the 1950s.

**Table 3-5. Special Status Plant Species.**

Species	No. Sites	Acres Occupied (GIS)			
		Total	Average	Minimum	Maximum
Arrow-leaf thelypody	46	74	2	< 0.01	9
Dwarf suncup	1	1	1	1	1
Transparent milkvetch	22	351	15	< 0.01	64
Total All Species	69	426			



Special status plants contributed to the finding that botanical values are an outstandingly remarkable value of the John Day River, resulting in its designation as a Wild and Scenic River. The transparent milkvetch is found in Segment 10 and is suspected to occur in Segment 11. Arrow-leaf thelypody is found within Segments 3, 4, and 6 and is suspected to occur in Segments 10 and 11.

## Noxious Weeds

Noxious weeds and expansion of some native species (e.g., juniper) are increasing problems within the John Day Basin (BPA 2005). The rapidly expanding occupation of the John Day Basin by noxious weeds represents the single greatest threat to native rangeland biodiversity and recovery of less-than-healthy watersheds (DiTomaso 2000). The initiation and spread of noxious plants have been furthered by human disturbances such as recreational use, grazing management, and fire suppression. Native bunchgrasses have been depleted in many areas as the range of the western juniper expanded. Exotic annual grasses such as cheatgrass and medusahead have filled the niche formerly occupied by the perennial grasses.

“Noxious” is a legal classification rather than an ecological term. Plants that can exert substantial negative environmental or economic impact can be designated as noxious by various government agencies. Noxious weeds affect livestock grazing, recreation, timber production, and wildlife and scenery viewing by displacing native plant species and lessening natural biological diversity; degrading soil integrity, nutrient cycling, and energy flow; and interfering with site-recovery mechanisms, such as seed banks, that allow a site to recover following disturbance (Quigley and Arbelbide 1997).

The weeds causing the most concern in the John Day Basin are diffuse, spotted, and Russian knapweeds; Dalmatian toadflax; yellow star-thistle; clasping pepperweed; leafy spurge; tamarisk; Scotch thistle; purple loosestrife; rush skeletonweed; white top; puncturevine; poison hemlock; and medusahead.

Weeds of special concern are those beginning to occupy very small niches with just a few plants along the high water lines, and small patches on islands (mainly diffuse knapweed and Dalmatian toadflax) that could spread very rapidly. Also, small infestations of Russian knapweed and Dalmatian toadflax are becoming more prevalent on the upper, sheltered alluvial flats. This is especially noted on almost all riparian zones below the confluence of Thirtymile Canyon at RM 84, but a few plants of purple loosestrife and rush skeletonweed have also been found and hand pulled. In the Clarno area, medusahead is common on the west side of the river to the north and south of Highway 219, in previously burned areas. It is also prevalent in the Murderer’s Creek drainage and in clay soils across the basin. Diffuse knapweed is found along the road right-of-way, south of Clarno. Russian knapweed is also very prevalent in the Clarno and Bridge Creek areas, and has also been found in many very small patches along the river almost always on the upper alluvial flats. Dalmatian toadflax is also found on these flats and is beginning to move up slopes in a few spots, especially below Thirtymile Canyon. Chemical control of Dalmatian Toadflax in the John Day River system is quite difficult where access is limited. The thistles (Scotch, bull, and Canada) and poison hemlock are found most commonly at the small tributaries near and in riparian areas. Yellow starthistle has been found in several locations in the Clarno area and is especially prevalent in the upper Bridge Creek area near Mitchell. It is also prevalent near the Columbia River at Biggs and Horn Butte.

The BLM Prineville District coordinates weed prevention, detection, and control efforts with the local County Weed Boards, ODA, ODOT, National Forests, local Soil and Water Conservation Districts, as well as private landowners and neighborhood community groups. The BLM’s Partners Against Weeds Strategic Plan highlights cooperative partnerships to control and manage invasive and noxious weeds. BLM is a partner in the Bridge Creek Cooperative Weed Management Areas. The BLM has six agreements with the counties in the planning area. The BLM uses these partnerships to combat invasive weeds and conduct inventories.



# Fire and Fuels

## Fire Ecology

Fire ecology is concerned with linking fire processes and the ecological effects to vegetative communities and organisms. Fire is an integral component to the function of many vegetative communities (BpS) and the organisms that rely on them. The combination of numerous variables (slope, aspect, elevation, precipitation, etc.) influences the types and characteristics of vegetation and disturbance patterns on a given site. The primary disturbance element in most BpSs is fire, which is described in terms of fire regime. A fire regime describes the typical fire frequency and severity that fire follows in a particular BpS. The five fire regimes are described below:

- Fire Regime 1                      0 to 35 year frequency; low intensity (i.e., pine)
- Fire Regime 2                      0 to 35 year frequency; high intensity (i.e., rangeland)
- Fire Regime 3                      35 to 200 year frequency; mixed severity (i.e., mixed conifer)
- Fire Regime 4                      35 to 200 year frequency; lethal severity (i.e., dry range types)
- Fire Regime 5                      200+ year frequency; lethal severity (i.e., high elevation)

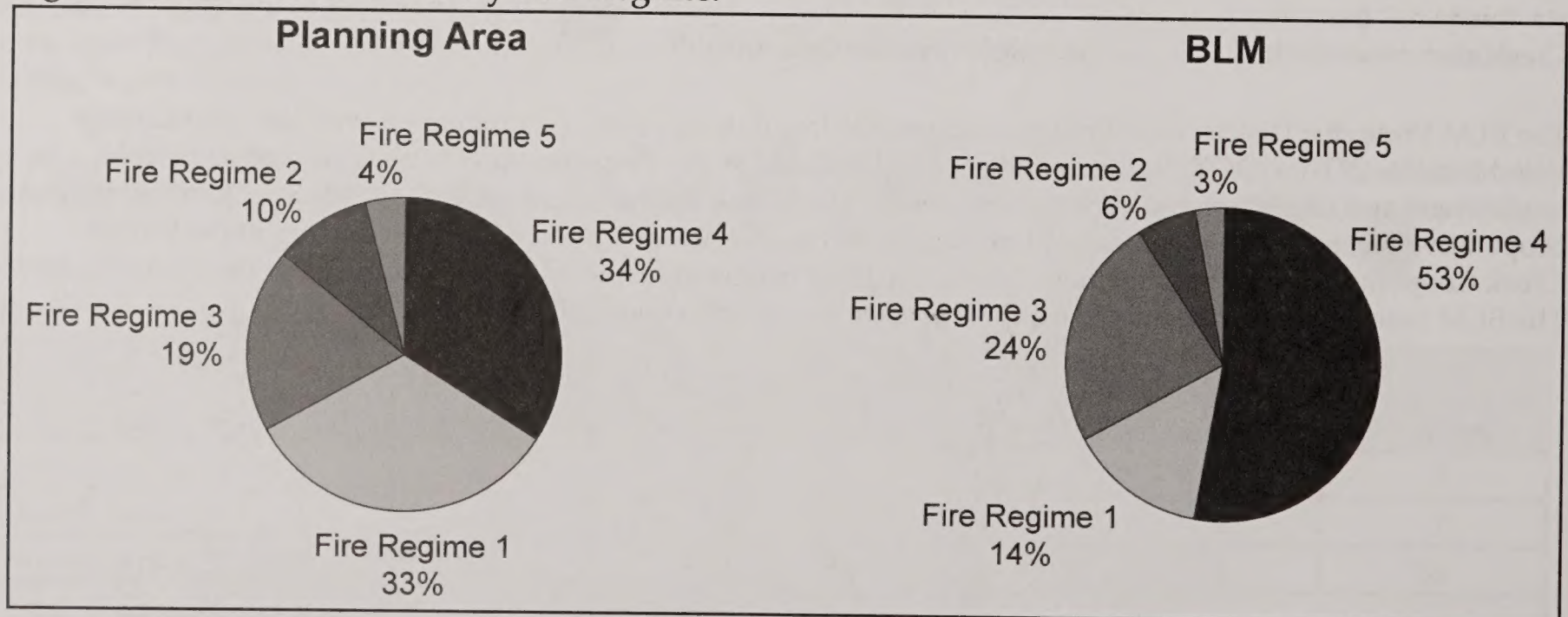
Fire Regime Condition Class (FRCC) is an estimate of the degree to which current landscape conditions have departed from historical reference condition vegetation and disturbance regimes (Hann *et al.* 2004). Assessing FRCC can help guide management objectives and set priorities for treatments. The classification is based on a relative measure describing the degree of departure from the historical natural fire regime. This departure is evidenced by changes to one (or more) of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern) and fuel composition. The departure of these conditions results in altered disturbance (e.g., fire, insect, and disease) frequency, severity, and pattern.

FRCC classes serve as generalized ecological risk rankings. The risk of loss of desired ecological conditions due to too little or too much wildland fire, or to uncharacteristic vegetation structure or composition increases from Fire Condition Class 1 (lowest risk) to Fire Condition Class 3 (highest risk) within a given fire regime (Hann *et al.* 2004).

Table 3-6 displays Vegetation types (BpSs) their respective fire regime, current acreages, and most prominent Fire Regime Condition Class.

Fifty-three percent of the planning area is dominated by vegetation types that characteristically have low frequency, lethal severity fire regimes (fire regime type 4). Another 24% and 14% are dominated by vegetation types having fire regime types 3 and 1, respectively (see Figure 3-14 Percent of Area by Fire Regime).

**Figure 3-14. Percent of Area by Fire Regime.**





**Table 3-6. Distribution of Fire Regime Types and Fire Regime Condition Class by Biophysical Setting for the John Day Basin Planning Area.**

Biophysical Setting (Vegetation Type)	Fire Regime Type	Total acres in planning area	Acres of BLM lands in planning area	FRCC in planning area (all jurisdictions)
Wyoming Big Sagebrush Semi Desert with Trees	4	1,214,441	162,848	2
Inter-Mountain Basins Big Sagebrush Shrubland	3	367,806	69,075	3
Inter-Mountain Basins Semi-Desert Grassland	4	196,069	39,381	2
N. Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest	1	1,215,329	36,661	3
N. Rocky Mt. Ponderosa P. Woodland Mesic	1	550,139	25,930	3
Columbia Plateau Steppe and Grassland	2	395,618	18,611	2
Mountain Big Sagebrush with Conifers	4	176,435	16,784	2
Columbia Plateau Low Sagebrush Steppe	4	91,750	12,623	3
Stiff and Low Sagebrush with Trees	3	192,438	10,990	2
N. Rocky Mt. Ponderosa Pine Woodland-Xeric	3	123,306	10,355	2
Juniper Steppe Woodland	3	49,662	8,149	2
Rocky Mt. Montane Riparian System	3	140,427	6,361	3
Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland	2	131,120	6,239	3
Columbia Plateau Scabland Shrubland	5	75,789	6,169	3
Inter-Mountain Basins Montane Riparian Systems	5	131,458	6,149	3
Inter-Mountain Basins Mountain Mahogany W & S land	4	16,603	3,112	1
Riparian Systems	3 to 5	12,979	1,973	2
Northern Rocky Mountain Western Hemlock-Western Red Cedar Forest	3	89,105	1,000	1
Rocky Mt. Subalpine/Upper Montane Riparian Systems	3	52,064	751	1
Rocky Mountain Supalpine-Montane Mesic Meadow	2	10,691	600	3
Rocky Mountain Poor Site Lodgepole Pine Forest	4	19,343	473	3
Inter-Mountain Basins Greasewood Flat	5	552	67	3
Northern Rocky Mountain Subalpine Dry Woodland and Parkland	3	17,186	25	1
Rocky Mt. Subalpine Dry-Mesic Spruce Forest	4	68,962	2	2

Figure 3-15 and Table 3-6 indicate that about 97% of BLM-managed lands within the planning area are in Condition class 2 or 3.

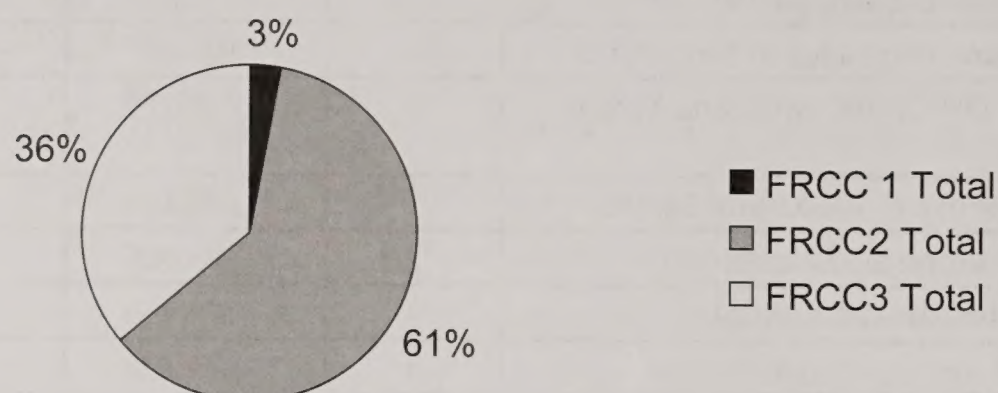
The FRCC is similar between BLM lands and those not managed by BLM. The majority of the landscape is in FRCC 2 and 3 regardless of jurisdiction. Of note is the extreme departure within the Columbia Basin primarily due to agricultural conversion. While conditions on BLM lands are similar to those seen on surrounding lands, the BLM has the potential to influence approximately 8% of the land base within the planning area.

In general, most shrub steppe/juniper habitats are in Condition Classes 2 and 3. Most of the forested lands are in Condition Class 3. Many of the grass habitats on BLM-managed lands have missed one or more disturbance events; however, the vegetative characteristics and fire intensities have not substantially changed. Native grasses



**Figure 3-15. Fire Regime Condition Class on BLM Lands Across the John Day Basin Planning Area.**

**Percentage of BLM Lands by Fire Regime Condition Class (FRCC)**



have been replaced by nonnative annual grass expansion, noxious weeds, and agricultural conversion. These conditions would put these lands in the Condition Class 3 rating. These sites would require extensive management actions (restoration treatments) to allow them to function appropriately after disturbances such as fire.

## Fire

Fire and fuels resources in the John Day Resource Management planning area are managed as part of the Central Oregon Fire Management Service (COFMS). The COFMS organization facilitates full collaboration between the federal, state, and local agencies and private entities, resulting in a mobile fire management work force available to the full range of public needs. Fire suppression and fuels treatment objectives from the various land use plans within the COFMS boundary have been incorporated into the 2004 COFMS Fire Management Plan. Fire Management Units (FMU) are identified as a way to place information about specific fire risk, priorities for suppression and fuels treatments, and operating procedures for like conditions within the COFMS boundary, they are not land use allocations. Information pertinent to the John Day Basin planning area is listed below for each of the six FMUs.

Six Fire Management Units (FMU) have been identified throughout COFMS (see Figure 3-16: Central Oregon Fire Management Plan—Fire Management Units). These FMUs provide context for fire management and may be modified as conditions change. FMUs do not constitute planning decisions.

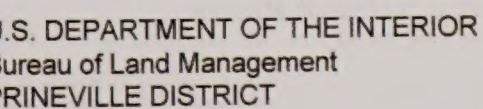
### Fire Management Unit 1 – Wildland Urban Interface (WUI)

Without a Community Wildfire Protection Plan, COFMS defines a default wildland urban interface as the 1.5 mile area surrounding each designated community at risk as well as around critical evacuation routes or other special use areas as identified by Oregon Department of Forestry. Under the Healthy Forest Restoration Act, Communities at Risk are encouraged to develop Community Wildfire Protection Plans identifying needs to respond to and deal with the threat of wildfires on public and private lands (see Map 5: Fire Response Zones for the Current WUI areas in Chapter 2).

These plans can increase or decrease the WUI boundary based on community input and risk. The following areas in the project area are considered communities at risk:

- The Fossil Beds area is composed of the area surrounding the John Day Fossil Beds National Monument. Vegetation is grass and shrub steppe.





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September 2004



- The Monument area is located adjacent to the community of Monument and includes the communities of Kimberly, and Spray. Vegetation is primarily grass and sage with some timbered areas.
- The Wheeler area includes WUI associated with the communities of Fossil and surrounding areas. Vegetation is dominated by grass and shrubs.

Other WUI communities include: Antelope, Anton, Arlington, Austin, Big Muddy Ranch, Biggs Junction, Canyon City, Clarno, Condon, Dayville, Grass Valley, John Day, Kent, Long Creek, Mayville, McDonald Crossings/Rock Creek, Mitchell, Moro, Mount Vernon, Prairie City, Seneca, Service Creek, Shaniko, South Fork John Day, Twickenham, and Wasco.

Community Wildfire Protection Plans (CWPP) have been developed for Grant, Wheeler, and Gilliam counties in the planning area, covering all communities at risk within the county boundaries.

## **Fire Management Unit 2 – Wilderness and Wilderness Study Areas**

This FMU consists of designated Wilderness and Wilderness Study Areas on Prineville BLM District. Vegetation is composed of grass/shrub lands with timbered slopes of juniper and ponderosa pine. WSAs are South Fork, Thirty Mile, North Pole Ridge, and Spring Basin (Wilderness), which are vegetated with grass/shrub. The Pat's Cabin, Sutton Mountain, Aldrich Mountain, and Strawberry Mountain WSAs have vegetation composed of grass/shrub lands with timbered slopes of juniper and ponderosa pine.

## **Fire Management Unit 3 – Two Rivers**

This FMU consists of lands administered by the BLM, primarily located along the Deschutes and John Day River corridors. The FMU consists of steep canyons associated with the Deschutes and John Day Rivers. Soils are generally shallow with surface rock. Vegetation is dominated by grass and shrubs. Elevation ranges from about 500 to 2,500 feet.

Limited road access and irregular land ownership patterns result in poor emergency ingress/egress. The John Day River corridor has a high fire risk and is prone to weedy plant invasion. Much of the BLM land along the John Day River adjoins private lands. The private land (mostly range and farmland) creates an agricultural interface near the river where river access is limited.

## **Fire Management Unit 4 – Brothers**

This FMU consists of lands administered by the BLM, primarily located in the southern and eastern portions of COFMS. A few scattered parcels of land within this FMU are located in the northern portions of COFMS within Sherman and Wasco Counties.

The FMU consists primarily of flat and rolling hill topography. Soils are generally shallow, developed from basalt flows, with some areas of thin surface volcanic ash deposits. Vegetation is dominated by sage and other shrubs, perennial and annual grasses, and juniper. Ponderosa pine is present in foothill areas and adjacent to national forest areas. Elevation ranges from 2,500 to 3,500 feet.

## **Fire Management Unit 5 – Ochoco**

This FMU includes the main portion of the Ochoco National Forest located near the center of the FMU. The FMU is located primarily within Crook, Wheeler, and Grant Counties.

The FMU consists of variable topography, vegetation and fuel types, including abundant ponderosa pine, mixed conifer, juniper and grass/sage. Scab stringer types (rocky areas) are found east of Big Summit Prairie.



## Fire Management Unit 6 – Deschutes

This FMU does not occur within the planning area.

## Fire Occurrence

Fire occurrence data below is a summary of the entire COFMS area contained in the Central Oregon Fire Management Plan; consequently, it contains data for almost all of the planning area plus much of the Deschutes Basin as well.

Fire Management Unit 1: WUI—There was a total of 1,101 fires within this FMU during the period 1980-2002. The average annual occurrence is 50 fires per year, with about 50% being lightning caused. Forty-three fires exceeded 100 acres in the last 10 years, and 15 were larger than 1,000 acres. Average annual expected burn acres are about 5,540 acres.

Fire Management Unit 2 – WSA: There was a total of 781 fires within this FMU during the period 1980-2002. The average annual occurrence is 35 fires per year, with about 80% lightning caused. Twelve fires exceeded 100 acres in the last 10 years, and 6 were larger than 1,000 acres. Average annual expected burn acres are about 1,250 acres.

Fire Management Unit 3 – Two Rivers: There was a total of 227 fires within this FMU during the period 1980-2002. The average annual occurrence is 10 fires per year, with about 51% lightning caused. A higher percentage of human-caused fires occur along the Deschutes River due to a railroad line and higher recreation use. Sixty-five fires exceeded 100 acres in the last 10 years, and 16 were larger than 1,000 acres. Average annual expected burn acres are about 9,380.

Fire Management Unit 4 – Brothers: There was a total of 648 fires within this FMU during the period 1980-2002. The average annual occurrence is 29 fires per year, with about 84% being lightning caused. Seven fires reached a size of 100 acres or larger. The largest was a fire in 1998 that reached about 8,000 acres. Expected annual burn area is about 1,700 acres.

Fire Management Unit 5 – Ochoco: There was a total of 1,425 fires within this FMU during the period 1980-2002. The average annual occurrence is 64 fires per year, and about 75% are lightning caused. Eight fires exceeded 100 acres in the last 10 years, and two were larger than 1,000 acres. The average annual expected burn acres are about 1,450 acres.

## Fuels Treatments

Since National Fire Plan implementation in 2001, the fuels management program, including prescribed burning and mechanical fuels treatments (manipulation of vegetation with chainsaws or other equipment), has steadily increased. Prescribed burning and mechanical fuels treatments for the years 1995 through 2005 are summarized in Table 3-7. For more information on silvicultural treatments of forest fuels, see the Forest Products section of this document.

Table 3-7. Fuels Treatments.

Year	Prescribed Fire	Mechanical Treatments
1995	2,411	
1996	450	
1997	2,445	
1998	673	
1999	1,034	
2000	725	
2001	12,247	
2002	3,915	63
2003	17,488	100
2004	16,656	2,291
2005	14,665	1,500
<b>TOTAL</b>	<b>72,709</b>	<b>3,954</b>



# Aquatic Resources

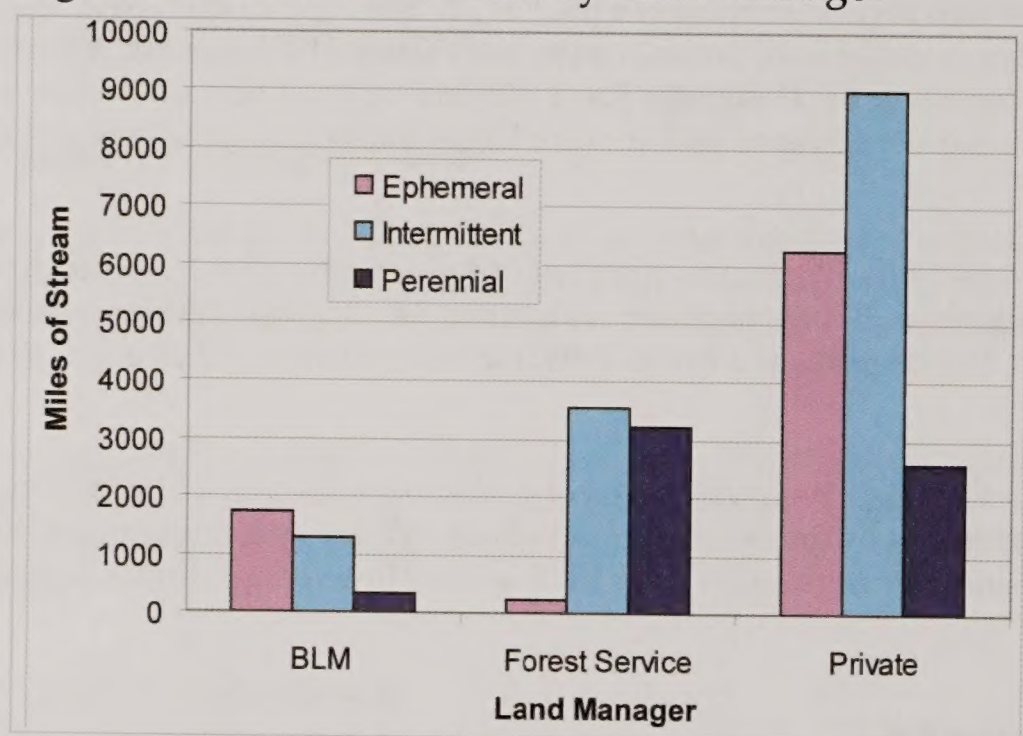
## Stream Channels and Floodplains

BLM manages land and water in 46 different watersheds in the planning area. The planning area includes 28,000 miles of streams including:

- Ephemeral - streams that do not flow during an average water year but do flow in response to large precipitation events.
- Intermittent - streams that flow during spring runoff of an average water year, but generally dry up later in the summer.
- Perennial - streams that flow some water all year of an average water year.

One-third of planning area streams are ephemeral, half are intermittent, and the remainder are perennial. Figure 3-17 illustrates that BLM manages approximately 1,600 miles of intermittent and perennial stream channels within the plan area.

**Figure 3-17. Miles of Stream by Land Manager**

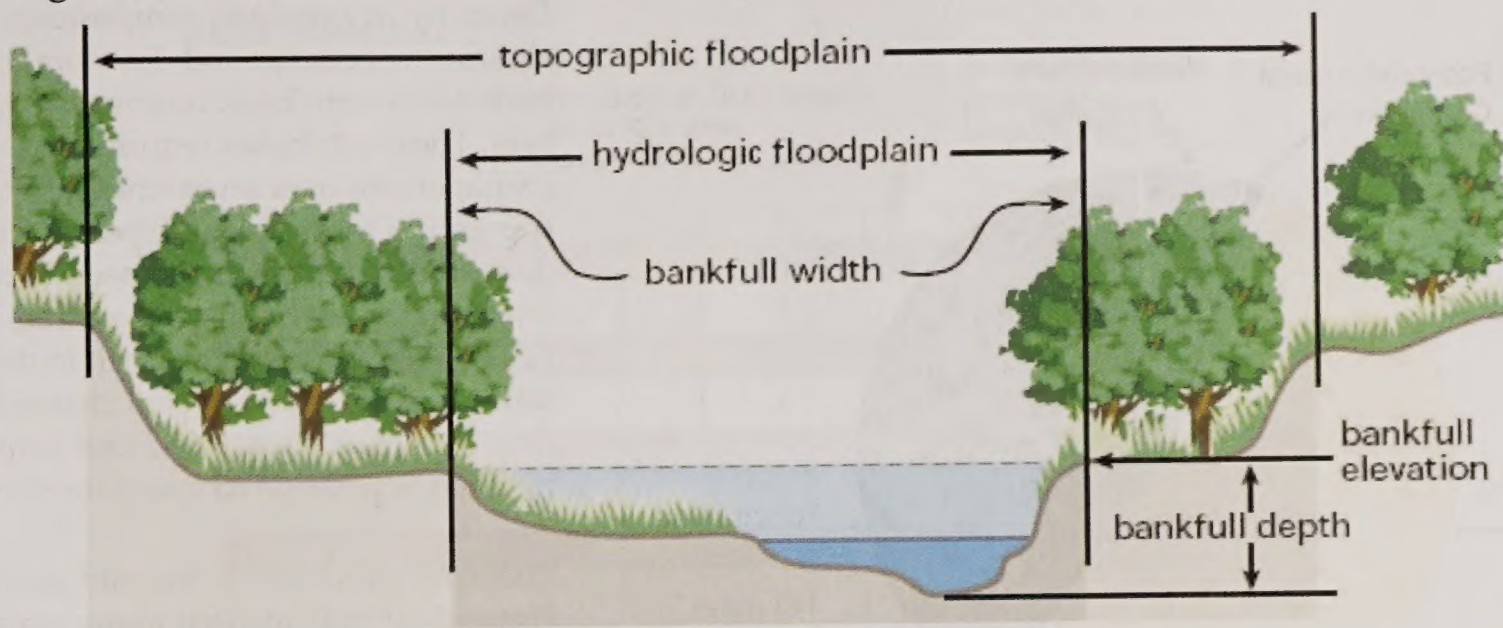


The majority of the perennial stream channels in the plan area occur on National Forest lands while private landowners own the majority of the intermittent and ephemeral stream channels. This distribution of stream ownership is largely due to the elevation of subject lands across the planning area. The Forest Service manages the headwater reaches and high elevation areas. These areas receive the highest precipitation levels from snow and produce the majority of the water for the planning area. Private land ownership generally lies downhill from Forest Service, but also centers around good perennial water sources that were important when the area was settled. The BLM manages many bottomlands and dry upland hill slopes. Overall, BLM managed land receives the least amount of precipitation of the three major ownerships, about 7 percent. Most of the snowmelt has been funneled into scattered perennial streams and major rivers by the time the water flows down to BLM land. Although BLM ownership is the smallest of the three major landowners, BLM manages many miles of large streams, rivers and floodplains with diverse public values.

Stream channels and floodplains are important because their shape and condition affect how rapidly water flows through a river system, how much water is stored within the basins, how clean the water is, and how much erosion occurs. These functions in turn affect fish and wildlife habitat, agriculture, recreation and the susceptibility of local communities and landowners to floods.

Prior to disturbances such as grazing, mining, and farming initiated during European settlement, the planning area stream channels were generally well vegetated and had frequent interaction with their floodplains (Figure 3-18).



**Figure 3-18. Stream Channel and Floodplain Configuration.**

As early land management reduced the watershed cover, overland flow of water increased and stream channels deepened to match the increased supply of water and sediment. Major flood events in the late 1800s were the likely immediate cause of the deepening of the channels. Channel incisions eventually lead to bank failures and subsequent channel widening (see Figure 3-19). As channel widening and bank failures continue, a new low-flow channel begins to form in debris from bank failure. Many of the stream channels in the plan area were in the process of this initial buildup in the 1980s.

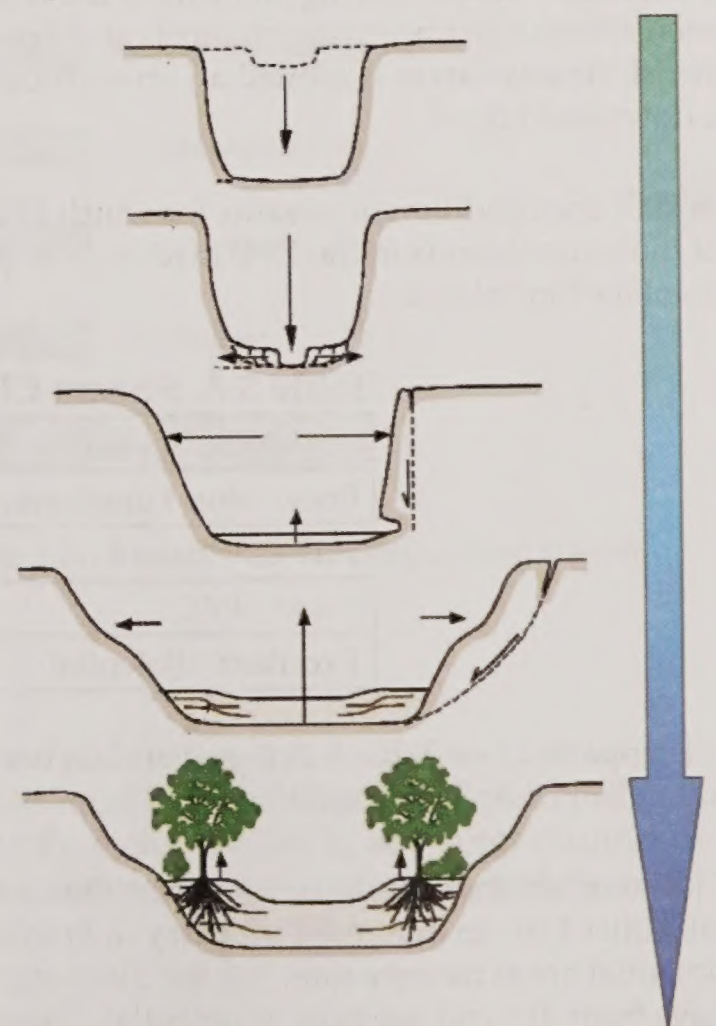
The result of this process is that new channels are usually lower than predisturbance channels, and the old floodplain now functions primarily as a terrace. Some terraces may be the result of climatic variations and associated changes in flow and sediment supply. The final stage of channel evolution results in a new bankfull channel and active floodplain at a new, lower elevation. Many stream channels in the plan area have new, lower elevation channels and floodplains.

The BLM has adopted Proper Functioning Condition (PFC) assessment (USDI-BLM 1991c) as a standard for evaluating riparian areas. Streams and wetlands located on BLM managed land have been assessed for condition using the PFC methodology. The PFC assessment employs a consistent approach for considering hydrology, vegetation, and erosion/deposition attributes and processes (Prichard *et al.* 1998). The assessment of the on-the-ground condition refers to how well the physical processes are functioning.

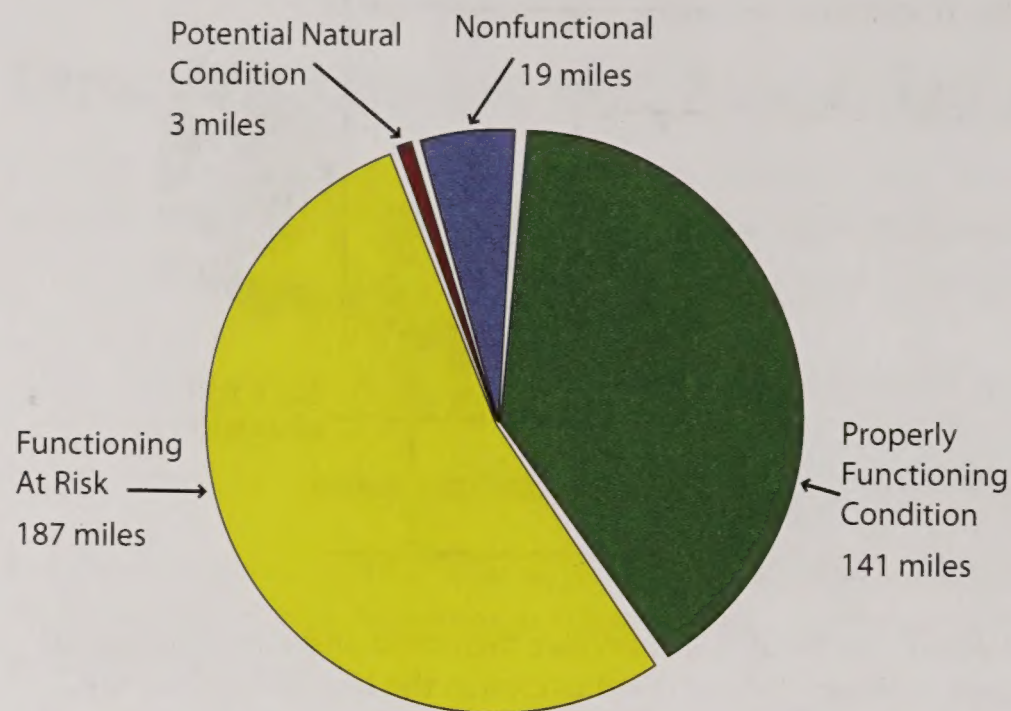
The majority of BLM stream channels and floodplains within the planning area are not meeting the BLM standard of PFC. On the other hand, relatively few stream channels are non-functioning. More intermittent stream channels are in non-functioning condition than perennial streams, but they also have more miles of stream at potential and PFC. The condition of inventoried stream channels in areas managed by the BLM is displayed in Figure 3-20.

The physical function of stream channels is based on their hydrology, vegetation and erosion/deposition. These physical functions are captured in the 17-question checklist from the PFC inventory (see Figure 3-21). The physical stream functions are in order from the least to greatest percentage of planning area streams in balance with the landscape.

The upper portion of Figure 3-21 illustrates two generalities about BLM stream channels. First, is the relative youth of

**Figure 3-19. River Channel Evolution.**



**Figure 3-20. Condition of Inventoried Stream Channels.**

restoration efforts in the planning area. Diversity in age class, composition of riparian vegetation and development of dense stream bank root masses are rare. These attributes require consistent management over an extended period, sometimes more than 100 years. A second general observation is the need to reduce stream energy, which can be achieved by restoring sinuosity and width to depth ratios. A majority of stream channels need time to recruit large wood and dense riparian vegetation to dissipate energy.

The three processes in the mid portion of Figure 3-21 indicate that many streams are still actively aggrading and widening. Although streams are connected to new floodplains, many of these new floodplains are insufficient for dissipating stream energy. Insufficient time has passed for

large wood and overflow channels to develop under the current system condition. Many upland watershed conditions are still contributing to elevated stream energy, inhibiting the achievement of channel equilibrium. Physical processes including vertical stability, vegetative vigor, and floodplain connectivity are generally functioning across the landscape. Although there are currently more than 40 active head cuts, most stream channels are vertically stable. Channels down cut during floods more than 100 years ago, and many have reached a new equilibrium or intercepted an erosion-resistant layer. Changes in riparian area management over the last 20 years have allowed vigorous riparian vegetation growth, and point bars are revegetating.

Management across the planning area has emphasized riparian area restoration since the Two Rivers and John Day RMPs were signed. Since 1992, efforts to improve riparian habitat have benefited from funding for clean water and watershed restoration. Management of timber, grazing, and road building have emphasized actions compatible with achieving an upward trend in stream channel and floodplain function. These measures have been effective in improving channels and floodplains on BLM managed public land. For example, 63 percent of at-risk riparian areas exhibited an upward trend at the time they were inventoried while only 9 percent exhibited a downward trend.

In 2005 the condition of streams for which PFC assessments have been completed was compared with condition of the same streams in the 1980 inventory of stream channel condition. The results of the comparison are displayed in Table 3-8.

**Table 3-8. Stream Channel Conditions, 1980s - 2000s.**

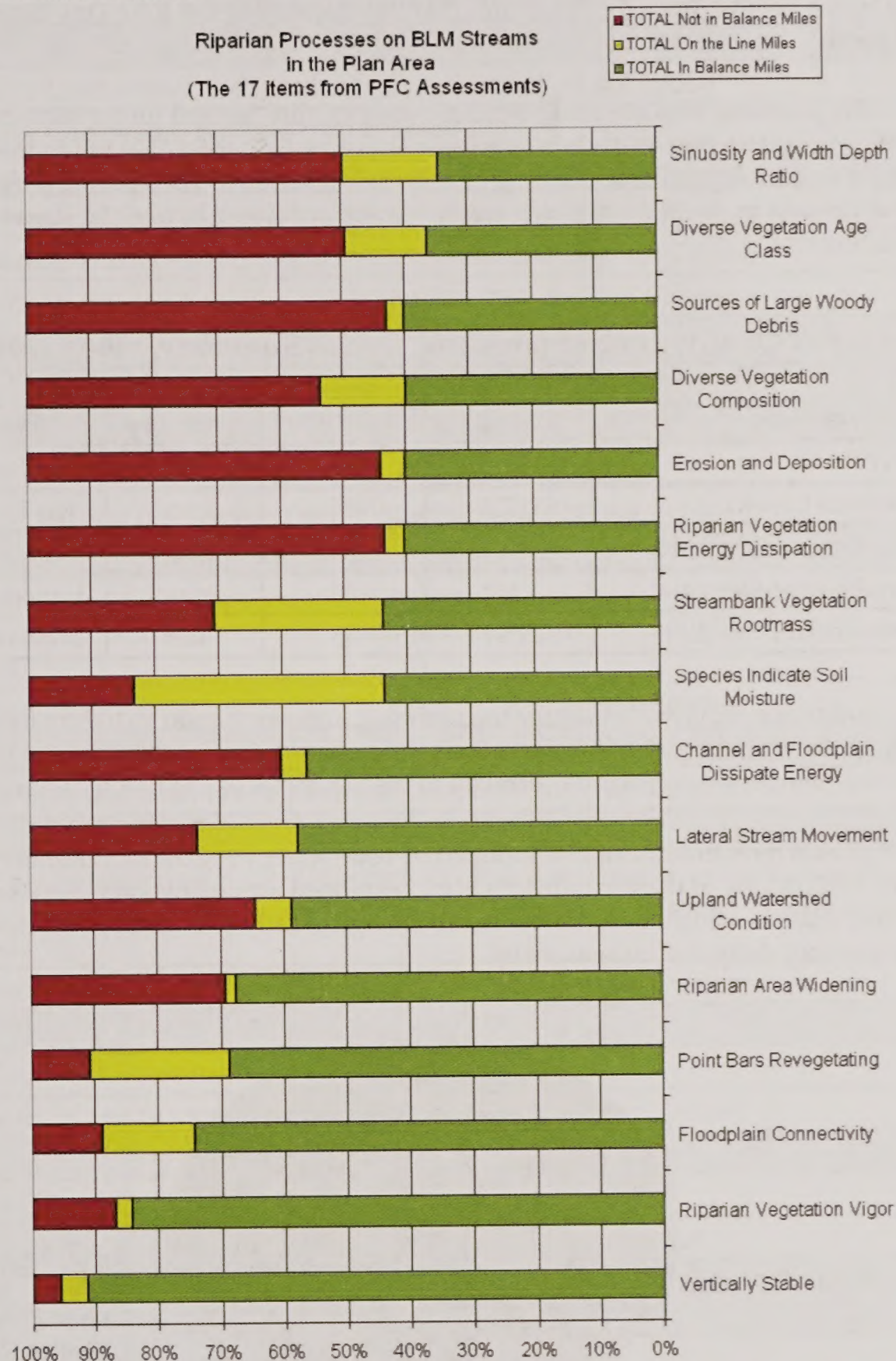
1980 Inventory - 2000s Inventory Class	1980s	2000s
Poor - Non-Functioning	12%	5%
Fair - At-Risk	76%	74%
Good - PFC	12%	21%
Excellent - Potential	<1%	<1%

It is apparent (see Table 3-8) that there has been a slight improvement in condition, but overall stream channels are in Fair or At-Risk condition.

Three stream channels have been identified as being at potential. They are an unnamed tributary to Rudio Creek off Miller Flat, an unnamed tributary to Franks Creek on Scott Creek allotment, and Marks Creek. Streams at potential are extremely rare. For the planning area, less than one percent of all inventoried BLM stream channels have been determined to be at potential. These areas provide important reference areas and benchmarks for



**Figure 3-21. Evaluation of Riparian Processes on BLM Streams.**



achieving desired conditions. These areas also serve an important function for wildlife that depend on conditions typical of a later seral stage.

## Water Quality

Water quality accounts for the biological, chemical, and physical condition of a water body. Water quality is evaluated based on a water body's ability to support beneficial uses of the water. Generally, key water qualities are those that support native fish and wildlife and support human uses such as agriculture, recreation, and domestic water supply.



The Oregon Department of Environmental Quality (DEQ) monitors selected water bodies for water quality. DEQ has analyzed water quality in the John Day Basin between 1995 and 2004. Each site with sufficient data was analyzed for general water quality. Table 3-9 illustrates that the majority of the John Day Basin major rivers have achieved a status of good.

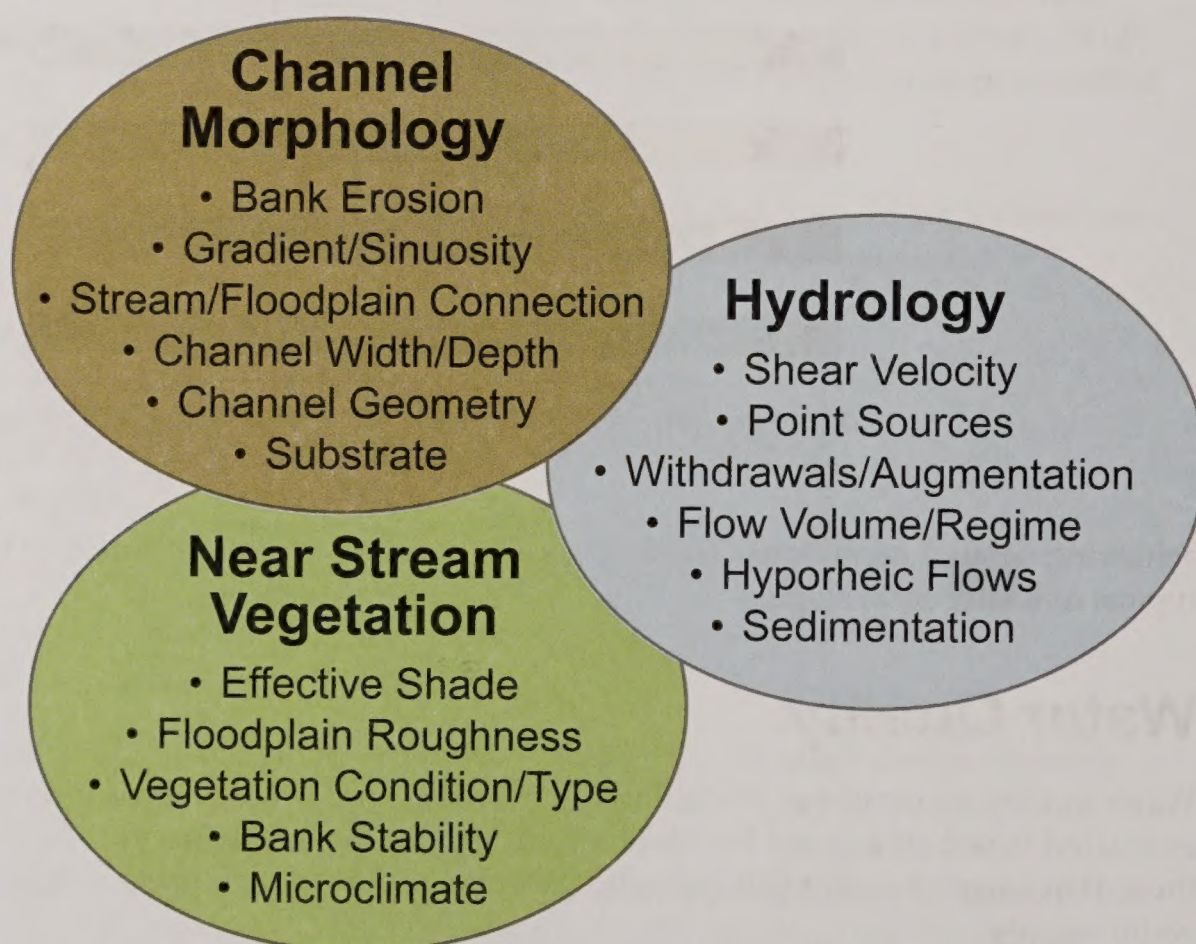
Many streams within the planning area are designated as water quality limited under section 303(d) of the Clean Water Act. Section 303(d) requires that each state develop a list of water bodies that fail to meet water quality standards and delineate stream segments and listing criteria for all streams. The specific parameters and stream names of 303(d) listed streams in the planning area are displayed in Table 3-10 and the streams are displayed in Map 19: 303(d) Listed Streams.

**Table 3-9. Oregon Water Quality Index Status and Trends Summary, 1994 - 2004.**

Major River Sites	At River Mile	Score out of 100	Category	Trend	Trend Magnitude
John Day River at HWY 206	39.5	80	fair	No Trend	
John Day River at Service Creek	157.4	85	good	No Trend	
North Fork John Day River at Kimberly	0.2	89	good	No Trend	
South Fork John Day River at Dayville	0.2	88	good	Improving	2.5
John Day River upstream of Dayville	215.4	83	fair	Improving	4.6

In general, the water quality concerns expressed for the planning area are similar to the surrounding region. For the John Day River Basin, as with the Columbia River Basin, the major water quality concern has been water temperature. These water temperature concerns correlate to the beneficial use of fish spawning and rearing habitat.

Conditions that affect stream temperature can be grouped as near-stream vegetation, channel shape, and hydrology (see Figure 3-22). Many of these conditions are interrelated and many vary considerably across the landscape. For example, channel width measurements can change greatly over even small distances along a stream. Some conditions vary daily and/or seasonally.



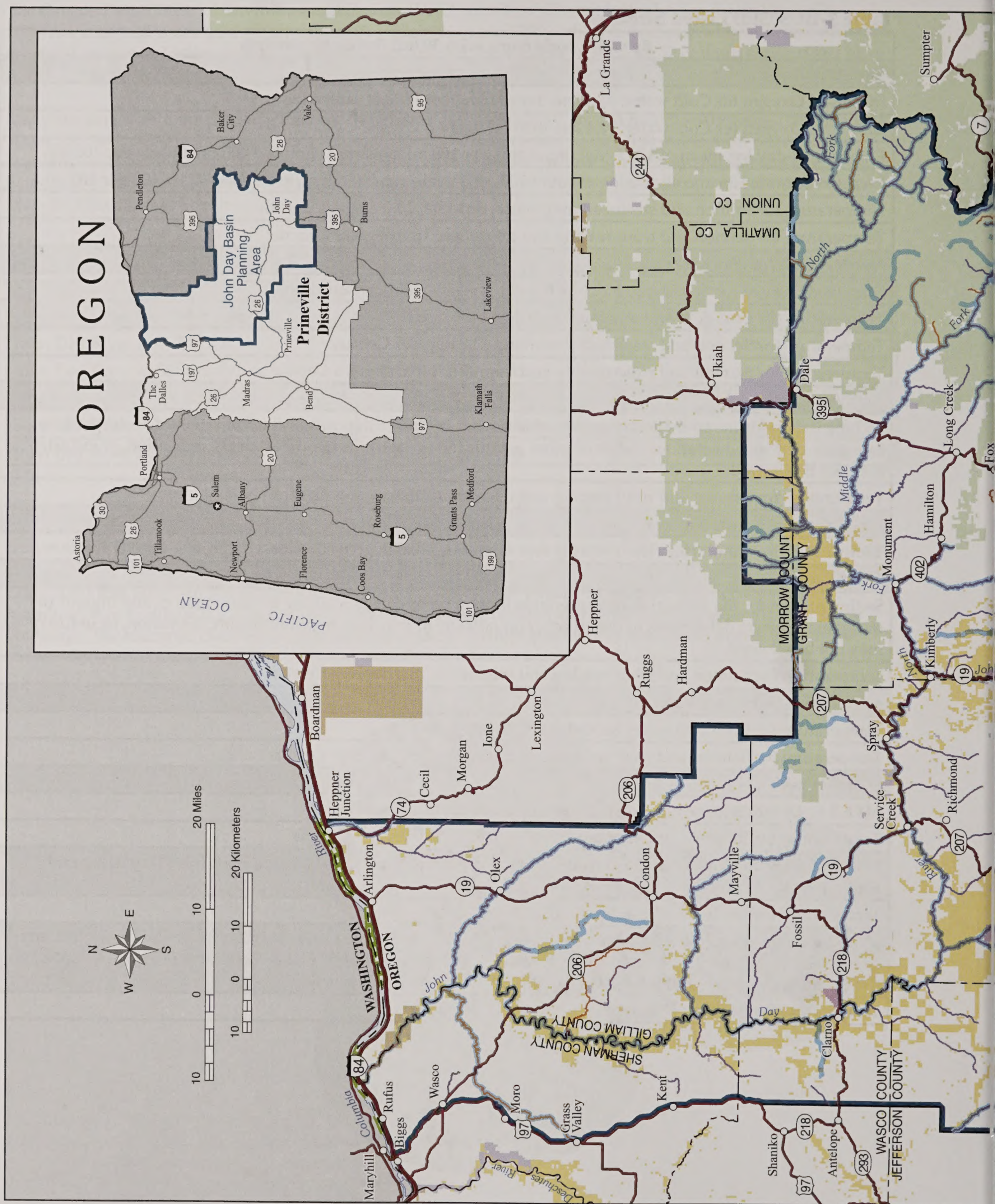
**Figure 3-22. Factors that Affect Stream Temperature Dynamics.**



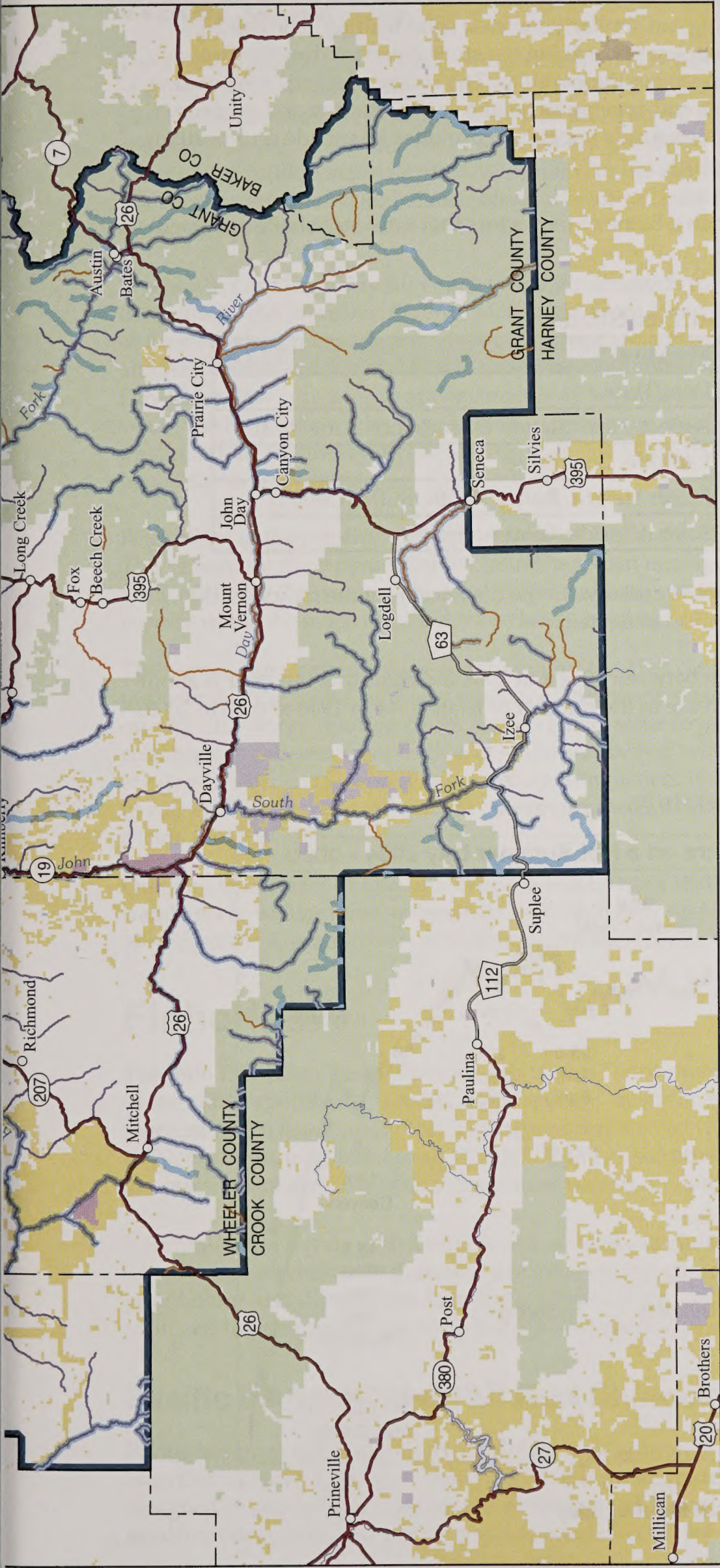
Table 3-10. 303(d) Listed Streams.

By water body name with 303(d) listing parameters	
<b>John Day River</b>	
Dissolved Oxygen for Cold water: Not less than 8.0 mg/l or 90% of saturation	
Dissolved Oxygen for Cool water: Not less than 6.5 mg/l	
<i>E. coli</i> for 30-day log mean of 126 <i>E. coli</i> organisms per 100 ml; no single sample > 406 organisms per 100 ml	
Fecal Coliform for Fecal coliform log mean of 200 organisms per 100 ml; no more than 10% > 400 per 100 ml	
Temperature for Salmon and steelhead migration corridors: 20.0 degrees Celsius	
Temperature for Salmon and trout rearing and migration: 18.0 degrees Celsius	
<b>North Fork John Day River</b>	
Dissolved Oxygen for Spawning: Not less than 11.0 mg/L or 95% of saturation	
Temperature for Core cold water habitat: 16.0 degrees Celsius	
Temperature for Salmon and steelhead spawning: 13.0 degrees Celsius	
Temperature for Salmon and trout rearing and migration: 18.0 degrees Celsius	
<b>Big Wall Creek</b>	
Sedimentation for the formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry may not be allowed.	
Temperature for Salmon and trout rearing and migration: 18.0 degrees Celsius	
<b>Hay Creek</b>	
Temperature for Salmon and trout rearing and migration: 18.0 degrees Celsius	
<b>Trout Creek</b>	
Sedimentation for the formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry may not be allowed.	
Temperature for Salmon and trout rearing and migration: 18.0 degrees Celsius	
<b>Middle Fork John Day River</b>	
Temperature for Core cold water habitat: 16.0 degrees Celsius	
Temperature for Salmon and trout rearing and migration: 18.0 degrees Celsius	
<b>Willow Creek</b>	
pH 6.5 to 9.0 for resident fish, aquatic life, and water contact recreation.	
Temperature for Redband or Lahontan cutthroat trout: 20.0 degrees Celsius	
<b>Service Creek, Indian Creek, Thirtymile Creek, Flat Creek, Rock Creek, South Fork John Day River and Rudio Creek</b>	
Temperature for rearing and migration: 18.0 degrees Celsius	
<b>Mountain Creek, Dads Creek, Murderer's Creek, Sunflower Creek, Canyon Creek, Potamus Creek, Mallory Creek, Sorefoot Creek, Deer Creek, Grass Valley Canyon, Bear Creek, Gable Creek, Little Pine Creek, Nelson Creek, Cottonwood Creek, Bridge Creek, Ditch Creek, and Battle Creek</b>	
Temperature for Rearing: 17.8 degrees Celsius	









Map 19: 303(d) Listed Streams

LEGEND

- Planning Area Boundary
- Potential Concern for One or More Criteria
- TMDL Approved
- Water Quality Limited Not Needing a TMDL For One or More Criteria
- Water Quality Limited, 303(d) list, TMDL needed

- Administered Land
- Bureau of Land Management
  - Forest Service
  - John Day Fossil Beds National Monument
  - Other Federal
  - State
  - Private or Other

U.S. DEPARTMENT OF THE INTERIOR  
Bureau of Land Management



PRINEVILLE DISTRICT  
John Day Basin  
Proposed Resource Management Plan  
Final Environmental Impact Statement

2012

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Map 19: 303d Listed Streams



Removal of riparian vegetation and the shade it provides contributes to elevated stream temperatures (Rishel *et al.* 1982; Brown 1983; Beschta *et al.* 1987). Channel widening can similarly increase solar loading. The principal source of heat energy delivered to the water column is solar energy striking the stream surface directly (Brown 1970). Exposure to solar radiation can cause an increase in stream temperature. The ability of riparian vegetation to shade the stream throughout the day depends on aspect and vegetation height, width, density and position relative to the stream, as well as aspect the stream flows (streamside vegetation provides less shade on a north or south flowing stream than on an east or west flowing stream).

Stream shade is a function of landscape and stream geometry. Some of the factors that influence shade are listed in Table 3-11.

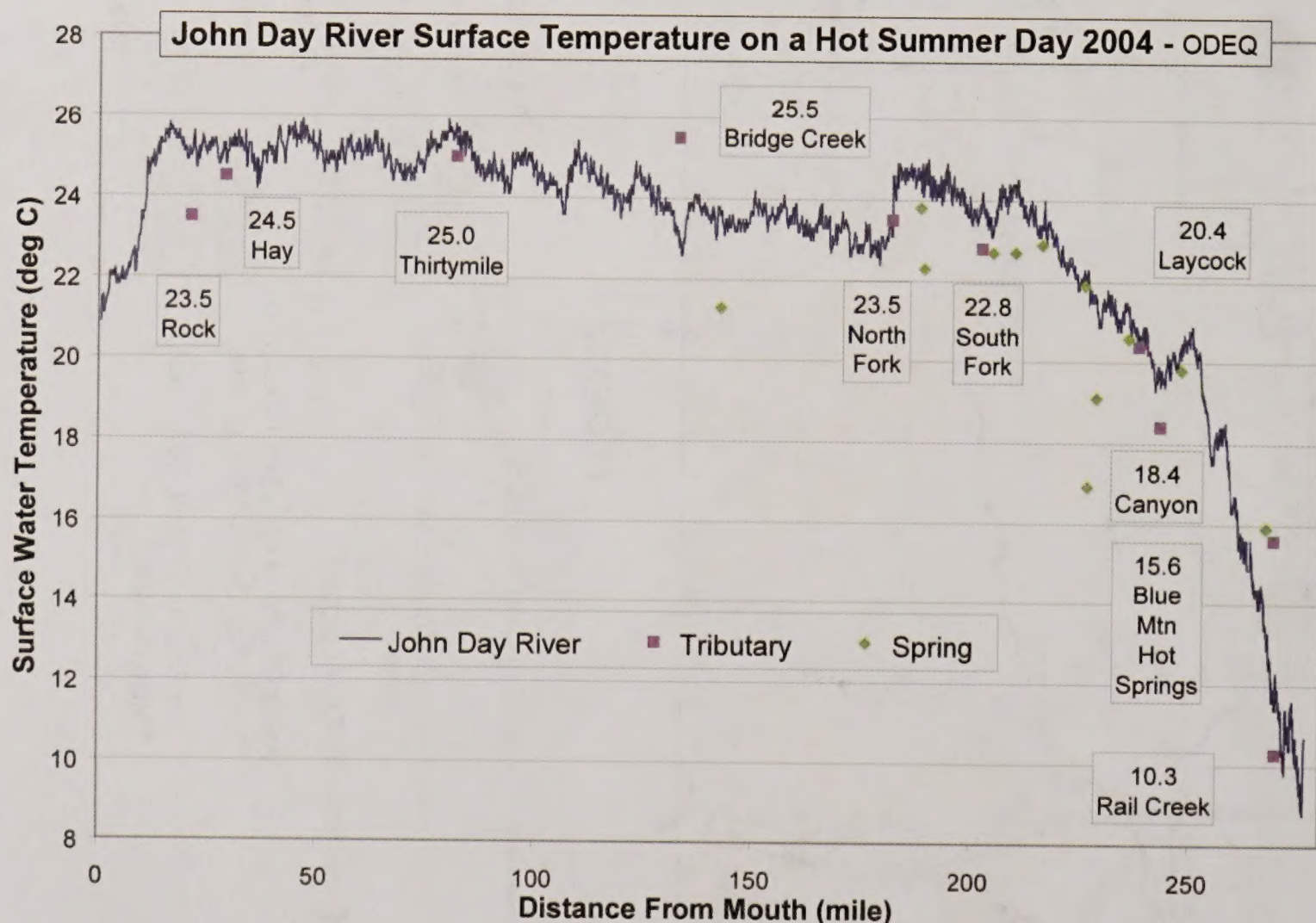
**Table 3-11. Factors that Influence Stream Surface Shade.**

Description	Measure
Season/Time	Date/Time
Stream Characteristics	Aspect, Near-Stream Disturbance Zone Width
Geographic Position	Latitude, Longitude
Vegetative Characteristics	Buffer Height, Buffer Width, Buffer Density
Solar Position	Solar Altitude, Solar Azimuth

Figure 3-23 indicates water temperatures of the John Day River relative to the distance from the mouth of the river. The temperatures of many important tributaries are also indicated.

Preliminary analysis by the BLM of changes in river width between 1944 and 2006 indicates that the river is about 50 percent wider now than in 1944. There was also an increase in the number of islands; 44 in 1944 and 66 in 2005. The total acreage of islands also increased 42 percent.

**Figure 3-23. John Day River Surface Temperature.**





## Water Quantity

The average annual precipitation within the John Day Basin is 7.5 million acre-feet. An acre-foot is the volume of water that covers one acre to a depth of one foot. Of this total, an average of about 1.5 million acre-feet flows past the McDonald Ferry Gaging Station 20 miles above the mouth of the John Day River. The amount of water entering the river below this point is extremely small due to a small drainage area and low rainfall level. The remaining 6 million acre-feet, or 80%, remains in the ground or evaporates or transpires into the atmosphere. For comparison, the water balance across the entire United States is approximately 30% runoff plus 70% evapotranspiration (Leopold 1994).

The North Fork John Day River at Monument accounts for two-thirds of the average annual stream flow near the outlet of the John Day River at McDonald Ferry. Flow is measured in cubic feet per second (cfs) or amount of flow required to pass one cubic foot of water in one second. The average annual flow at Service Creek is almost identical to the flow near the river outlet below McDonald Ferry. The contribution of the North Fork John Day River flow increases to approximately 80% during low summer flows. Similarly during low precipitation years, the North Fork John Day contribution to main stem flow is magnified compared to years with abundant precipitation. Seasons and years of low water yield are particularly crucial periods for most of the plan area's beneficial uses of water.

Regardless of the condition of BLM-managed lands, the BLM's impact on water conditions in the basin is limited. This is because the 9 percent of the John Day Basin managed by the BLM (measured from McDonald Gage) intercepts only 7 percent of the total volume of basin precipitation. By contrast, the Forest Service manages 33 percent of the drainage area, but those lands intercept 43 percent of the precipitation volume of the basin.

The annual flow patterns have changed since the 19th century. Historical descriptions of the John Day Subbasin indicate that the John Day River was once a relatively stable river with good summer streamflows and water quality, and heavy riparian cover. Stream banks were covered with dense growths of aspen, poplar, and willow; cottonwood galleries were thick and wide; and beaver were very abundant (Wissmar *et al.* 1994). Now peak flows are greater and late season flows are more diminished. It is suspected that these effects are due to reduced rates of soil infiltration, reduced capacity for ground water/riparian storage, and loss of in-channel storage in beaver ponds (NWPPC 2001).

Oregon Department of Fish and Wildlife and Oregon Water Resources Department have jointly recognized this trend and have identified watersheds with high flow restoration needs for salmonid recovery. These agencies identified streams and rivers with flow restoration needs in a map displayed as Figure 3-24.

## Fisheries

The John Day River Basin provides habitat for 29 documented species of native and nonnative fish species. Five of the native species are "special status species" including: Mid-Columbia summer steelhead distinct population segment (DPS) listed under the Endangered Species Act (1973) as Threatened (12/23/05), bull trout as Threatened (6/10/98), interior redband trout DPS (12/23/05) as sensitive, westslope cutthroat trout as sensitive, and Pacific lamprey as sensitive. Chinook salmon is an important native game species that spawns in the John Day Basin.

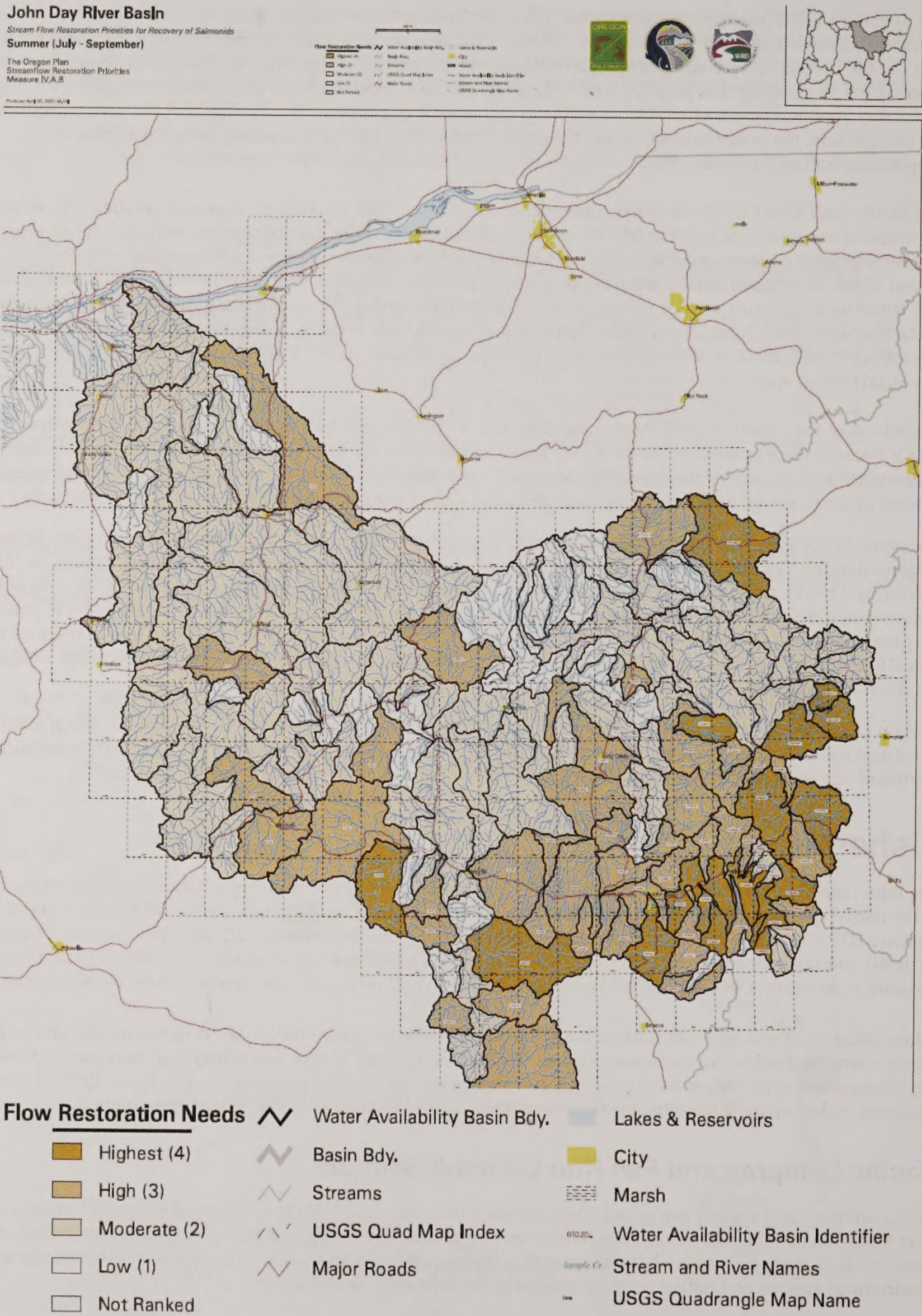
Information on trends and distribution has focused primarily on anadromous (sea run) salmonids, and to a lesser extent on resident salmonids and warm water game species. Native and introduced non-game species populations and distribution have generally not been assessed. Introduced game species typically have been analyzed to determine if the introduction was successful and if so what fishery could be sustained.

## Pacific Lamprey and Fall Run Chinook Salmon

Pacific lamprey and a small run of fall Chinook salmon in the lower John Day River are species of interest in the John Day system. Although these runs have been less extensively monitored than other runs, restoration efforts designed to protect and restore habitat for spring Chinook salmon and summer steelhead will benefit these anadromous species and native resident species in the John Day River System.



Figure 3-24. John Day River Basin Stream Flow Restoration Priorities.





## Spring Chinook and Summer Steelhead

The John Day River system supports one of the few remaining wild runs of Spring Chinook salmon (Lindsey *et al.* 1986; OWRD 1986; Quigley and Arbelbide 1997) and summer steelhead (Quigley and Arbelbide 1997; OWRD 1986) in the Columbia Basin, providing approximately 117 miles of spawning habitat for spring Chinook and 1,800 miles for summer steelhead (ODFW 1997).

Salmonid habitat is similar for the various species. Summer steelhead spawn in cool, clear streams with suitable gravel (pea size to golf ball size), depth and current velocity. Steelhead enter streams and arrive at spawning grounds weeks or even months before they spawn and are vulnerable to disturbance and predation during this time. Summer steelhead begin to spawn as the temperature of the water warms and approaches optimal levels in spring to early summer depending on elevations. Eggs hatch in 30 to 60 days depending on water temperature. Fry emerge from the gravel and within a few days absorb the yolk sack and become free swimming. Rearing habitat is cool, clean water with an optimum temperature of 55 degrees Fahrenheit. Channel structure includes pools and riffle/glides with adequate depth and overhead cover (vegetation, banks and/or woody debris). Vegetation near the channel is desirable to reduce solar radiation and also provided a food base for aquatic and terrestrial insects that, in turn, serve as a food for fish. Juvenile steelhead remain in these waters through the summer, fall, and winter and depending on conditions may begin their migration to the sea in the late spring one to three years after hatching. Within the plan area, 2,313 miles of stream are used by steelhead for spawning and rearing. Of those streams, 155 miles are in BLM managed streams (BPA 2006). In some instances steelhead may become residents and never migrate to the sea.

Chinook salmon spawning habitat is similar to that used by steelhead although ideal gravels are golf-ball to baseball sized. Spring Chinook spawn in the fall and eggs overwinter in the gravel with emergence occurring in the spring. Rearing occurs in the natal streams or adjacent cool water tributaries. Rearing habitats are the same as for steelhead. Juvenile out migration usually, but not always, occurs the following winter/spring on high flows. Within the John Day Basin, spring Chinook use 154 miles of stream for spawning and rearing, 467 miles of rearing and migration, and 10 miles for only migration. Of those streams, 136 miles are in BLM managed streams (BPA 2006).

The productivity of these populations is determined by the number of returning adults. Index reaches have been established by ODFW throughout the basin. These index reaches are monitored each year to determine the number of redds (spawning nests) and then extrapolated to an estimate of the number of returning adults. Table 3-12 displays the annual production goals for spring Chinook salmon and summer steelhead.

**Table 3-12. Average Annual Goals for Spring Chinook Salmon and Summer Steelhead.**

Species	Sport and Tribal Harvest Estimates	Natural Reproduction Escapement Estimates	Total Escapement Goal	Average Escapement 1989-1998
Spring Chinook Salmon	1,050	5,950	7,000	2,310
Summer Steelhead	11,250	33,750	45,000	8,370

Source: ODFW (1990)

Populations of desired fish species are the product of habitat features needed for the life stages from egg to maturity. Within the John Day Basin, stream/river habitats offer suitable gravel for spawning, adequate high quality water for rearing, and good flows for migrations. Out of basin influences such as hydroelectric dams, ocean conditions, harvest and predation play a vital role in the number of Chinook salmon and steelhead returning to the John Day Basin.

Key habitat quantity is a limiting factor for approximately 95 percent of the geographic areas for both Chinook salmon and summer steelhead. Key habitat quality refers to the key habitat type required of each life stage for each species. The John Day Subbasin Plan from the Northwest Power and Conservation Council identified channelization of streams and rivers, habitat diversity, water temperature, sediment load, and flow as limiting factors for steelhead and Chinook in their key habitats (Northwest Power and Conservation Council 2005).



The lower 200 miles of the John Day River function primarily as a migration corridor for anadromous salmonids. Tributary streams in this portion of the basin accounts for an estimated 6 percent of the steelhead production in the John Day Basin. A small run of fall Chinook salmon utilize the lower segment up towards Cottonwood Bridge for spawning (OWRD 1986). The upper main stem John Day River and/or tributaries produce an estimated 18 percent of the spring Chinook salmon and 16 percent of the summer steelhead in the John Day Basin (OWRD 1986). Increasing population trends since 1959 for spring Chinook salmon are indicated in the upper main stem John Day Subbasin. These trends are attributed to management and restoration efforts implemented over the last few decades (ODFW 1997). The South Fork Subbasin produces approximately 7 percent of the summer steelhead population in the John Day Basin (OWRD 1986). The North Fork and Middle Fork John Day subbasins produce approximately 82 percent of the spring Chinook salmon and 73 percent of the summer steelhead population in the John Day Basin (OWRD 1986). There has been no sport fishing of spring Chinook salmon since 1977, and the steelhead fishery has been limited to the catch and release of "wild" (non-adipose fin clipped) fish from 1996 to the present. Steelhead production takes place in the tributaries and headwaters of the river, mostly outside the river corridor (John Day River Proposed Management Plan 2002).

## **Resident Salmonids**

Several species of resident salmonids inhabit the John Day River system. Interior Redband trout (Behnke 1992) occur throughout the basin primarily occupying river habitats in the upper subbasins and tributary habitats.

Hatchery supplementation with rainbow trout occurred prior to 1986, but with the "wild fish policy" ODFW no longer releases hatchery fish in streams associated with the John Day River. One native subspecies of cutthroat trout, Westslope, is found in tributary streams of the upper main stem John Day River. Westslope cutthroat were introduced in 1960 from Deardorff Creek to Clear Creek and South Fork Desolation Creek in the North Fork John Day subbasin. Yellowstone cutthroat and Lahonton cutthroat were stocked in certain North Fork John Day reservoirs in the past.

Redband trout and Westslope cutthroat, like steelhead, spawn in the spring. Gravel size is smaller and depends on the size of the spawners. Redband trout can mature and spawn at 7-8 inches in length and continue spawning with increased growth. Incubation period is temperature dependent. Rearing habitats are similar to steelhead but typically upstream of these areas.

Rainbow trout were planted in various streams and ponds in the John Day Subbasin beginning in 1925 and periodically continued through 1997. Some streams only received one planting whereas other streams received 147. The streams where rainbow trout were consistently stocked include Canyon Creek and the John Day River in the upper main stem watershed; and Camas Creek, Desolation Creek and North Fork John Day River in the North Fork watershed (Northwest Power and Conservation Council 2005). The ODFW's "wild fish" policy suspended stocking in all streams; however, some ponds/reservoirs with a stream outlet were stocked until 2001. These plantings were designed for a "put and take" sport fishery and ODFW determined the risk was low that survivors from these plantings would interbreed with native populations (Morris 2006). Westslope cutthroat trout probably never were widely distributed in the Blue Mountains or Columbia Plateau.

Productivity has been adequate to sustain localized migratory and isolated populations, resulting in current populations thought to be fairly secure. However, this conclusion must be tempered by uncertainty regarding the genetic integrity of remaining populations. Most current wild populations are depressed. Hybridization, fragmentation and loss of migratory populations have limited healthy populations to a much smaller proportion of their historical range. Further, competition with introduced rainbow and brook trout has impacted the ability of the species to fully occupy its natural niche in the ecosystem (Northwest Power and Conservation Council 2005).

Bull trout were listed as threatened on June 10, 1998 (63 FR 31647). The John Day Basin is included in the Columbia River DPS. Within the basin, eleven existing local populations (or stocks) were identified. Three subbasins, North Fork John Day, Middle Fork John Day and main stem John Day each contain a Core Area, meaning the fish from the area spawn in a particular stream, at a particular season, and which to a substantial degree do not interbreed with any group spawning at a different place, or in the same place at a different season.



All spawning occurs in cooler headwater segments of the three subbasins. The various down river segments including BLM land are utilized as winter rearing/foraging habitat. Presently, bull trout occur in 45 percent of their historical range (Quigley and Arbelbide 1997). The North Fork and main stem John Day populations are considered to be at moderate risk of extinction, and the Middle Fork John Day are at high risk of extinction (Ratliff and Howell 1992).

Bull trout reach maturity at sizes similar to redband trout but are fall spawners. Substrate is normally smaller, clean gravels in headwater reaches. Bull trout prefer sites with upwelling rather than the typical pool tail area of other salmonids. Preferred temperatures in these headwater streams are cooler with the optimum about 45 degrees Fahrenheit. Rearing habitats are similar but productivity is greater in habitats with an abundance of woody debris.

Although bull trout historically occurred throughout the John Day subbasin, they were probably never as abundant as other salmonids in the subbasin. It is certain that they were more abundant and more widely distributed than they are today. The current distribution of bull trout is clearly fragmented (Ratliff and Howell 1992). In the winter of 2004, ODFW documented subadult bull trout movement in the main stem John Day River down to the National Park Service Interpretive Center (RM 203) and in the Middle Fork to the hot springs at Ritter (RM 15). Recent survey work by Oregon Department of Fish and Wildlife (Hemmingsen *et al.* 2001) detected bull trout in the main stem John Day River at river mile 170 near the town of Spray, downstream of the confluence with the North Fork John Day. Two bull trout were radio tagged and tracked upstream during the summer (Northwest Power and Conservation Council 2005). Both fish entered the North Fork, one traveling 112 miles over a period of 77 days, the other 137 miles into the tributary of Granite Creek to mile 3.8. The presence of bull trout at Spray confirms there is a component of movement along the rivers to the local population in both the North Fork and Main Stem John Day Rivers. These fish utilize the lower river segments, which include segments flowing through public lands, as winter foraging habitat.

## Introduced Smallmouth Bass and Channel Catfish

The John Day River also supports an increasingly popular warm water sport fishery. A review of habitat requirements revealed the river exhibits good conditions for both smallmouth bass and channel catfish. Upon assurance that warm water species predation on salmonids would be minimal, these species were introduced into the John Day River below Kimberly (RM 185) in the early 1970s (ODFW 1999). Smallmouth bass are distributed throughout the main stem from the mouth to Picture Gorge (RM 205), the North Fork from the mouth to Desolation Creek (RM 60), and the Middle Fork from the mouth to Big Creek (RM 39). This species appears to be increasing upstream distribution by adapting to marginal habitat conditions higher in the basin. Diet studies support the theory that smallmouth bass in the John Day are a minimal risk to migrating salmonids. Smallmouth bass have successfully filled a niche in the John Day River, which has developed into a nationally recognized sport fishery.

## Wildlife

The John Day Basin contains a rich wildlife population. Wildlife within the basin utilize habitats that range from dense moist forest to dry shrub and grasslands. There are 378 terrestrial species that use the Blue Mountains: 51 of these species migrate through or are occasional visitors in the Blue Mountains (Thomas 1979). There is one federally listed species with incidental and dispersal habitat, two formerly listed species, and 31 Bureau Sensitive Species (Appendix H). Mule deer, elk, antelope, bighorn sheep, and chuckar are considered locally important species. Additionally, there are numerous neotropical migratory bird and upland game birds.

The John Day Main Stem, North, and South Forks provide bald eagle winter roosting habitat, potential peregrine falcon eyrie habitat, California bighorn sheep habitat, and neotropical migratory bird habitats. Of the 378 terrestrial species known to occur in the Blue Mountains, 285 (over 75%) are either directly dependent on riparian zones, or use them more than other habitats. Consequently, these riparian areas are the most critical wildlife habitats in the Blue Mountains (Thomas 1979).



Neotropical migratory birds breed and raise young in the planning area in the spring and summer then migrate south to areas in Mexico and South America during the fall and winter. These birds range from small sparrows and warblers to large woodpeckers and raptors. All habitat types are utilized with riparian areas having the highest proportion of use.

Large ungulates, such as mule deer, elk and antelope, are common year-round residents in the John Day Basin. Critical big game winter ranges occur in the North and South Fork of the John Day Rivers (see Map 20: Wildlife Habitats). Many of the foothills along the John Day River are used as winter range by these species. The ODFW sets population and species management goals within the state. The BLM cooperates with ODFW in helping to meet these goals by providing an appropriate amount and quality of habitat on public land consistent with multiple-use management.

In 2005, ODFW published *The Oregon Conservation Strategy*. The BLM and other management agencies have agreed to manage consistent with direction contained in this document. The Oregon Conservation Strategy identifies habitat values, Conservation Opportunity Areas (COAs), and suggests management considerations. See Map 6 in Chapter 2 for the location of COAs.

## North Fork John Day Acquisition Lands

The wildlife habitat acquired in the John Day Basin contains representative coniferous forest, riparian, montane shrub, grassland, and western juniper habitat. The acquisition lands contain approximately 75 miles of riparian habitat.

The North Fork acquisition lands contain some of the most diverse riparian and coniferous forest communities on BLM land in the basin. The north slopes provide refugia for many wildlife species due to wetter communities that stay green longer during the hot summer months. The drainages, north slopes, and higher elevations on the north side of the river contain coniferous forest communities. Some of these forest communities are in relatively large blocks and stringers, providing contiguous habitat that benefit wildlife species utilizing interiors of these habitats.

The southern aspects and ridge tops on the north side of the river are drier habitat types that receive more solar radiation in the winter and thus provide important mule deer and elk winter range; providing habitat for 1,200 to 1,500 elk and 3,000 to 4,000 mule deer.

The North Fork provides important wintering habitat for the bald eagle, a large nesting population of Lewis' woodpeckers, and lies within historic California bighorn sheep habitat.

## Key Habitat Components

### Fragmentation

Fragmentation occurs when human or natural activity creates breaks in what was formerly more or less a contiguous habitat type. Palouse prairie habitats are some of the most fragmented habitats within the planning area due to agricultural conversion. This occurs primarily on private lands. Shrub steppe habitats are becoming more fragmented due to the expansion of juniper into these habitats. Forested habitats on BLM lands have lower levels of fragmentation than surrounding private lands. Roads and fire may also create breaks in habitat. For the most part, however, many roads on BLM lands are two-tracks that minimally contribute to fragmentation.

### Connectivity

Connectivity at the landscape scale has not been analyzed. There are known local migration areas for big game moving to wintering grounds. It is also believed that portions of the planning area provide connectivity for species dispersal between the Blue Mountains, Ochoco Mountains, and Cascade Range. Outside of fragmentation issues there are no known barriers within the planning area that would preclude habitats from being used as connectivity habitat.

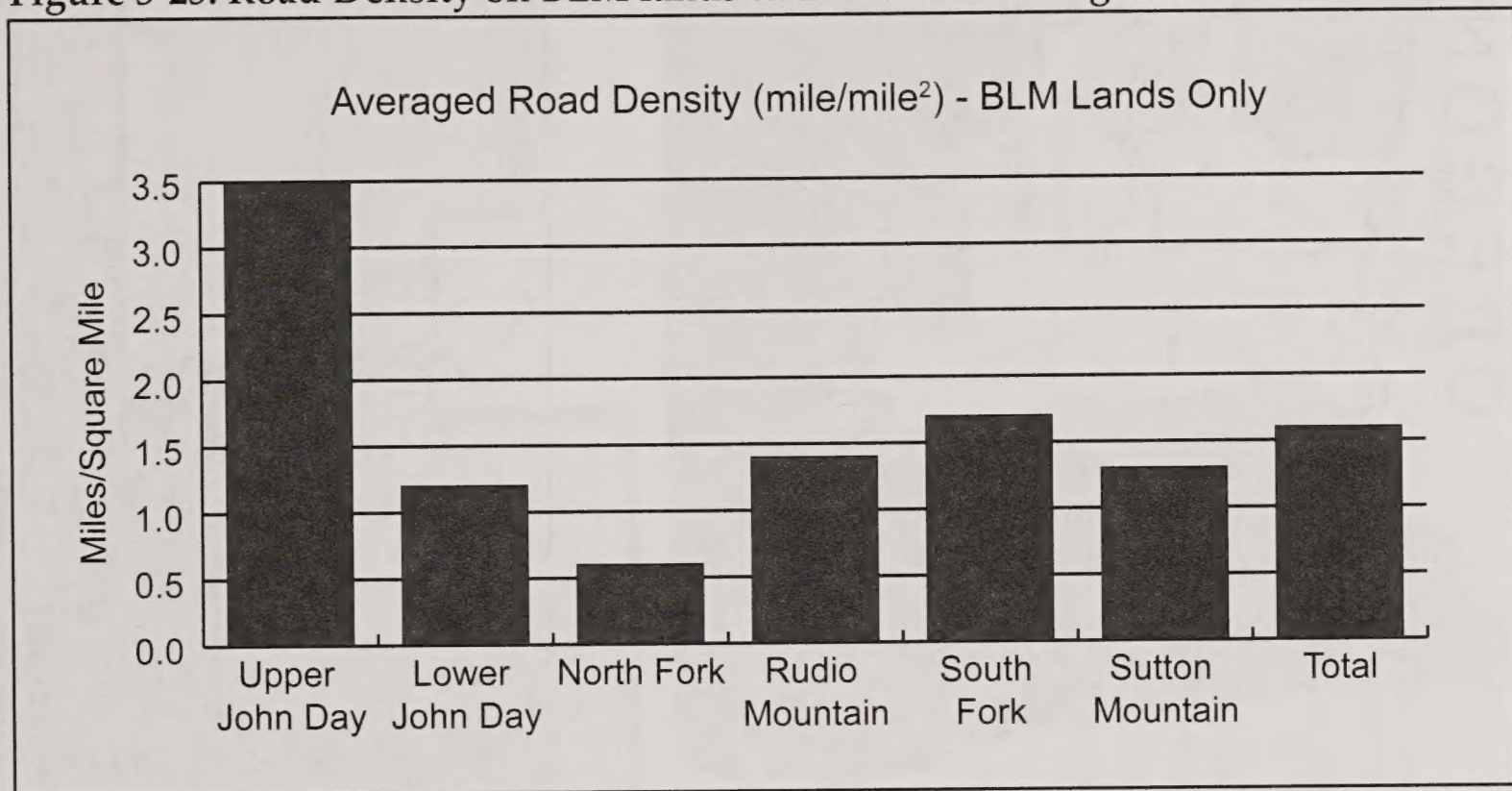


## Road Density

Road density is a key element in determining the amount of habitat fragmentation within a given area. Road density analysis was completed previously utilizing a roving windows approach. This method assigns road density groupings to areas of land.

Figure 3-25 displays the average road density on BLM lands within the planning area. In general, most lands are within the 0-2 or 2-4 miles per square mile (mi/mi<sup>2</sup>) range. This analysis was based on roads inventoried at the time.

**Figure 3-25. Road Density on BLM lands within the Planning Area.**



## Special Status Wildlife Species

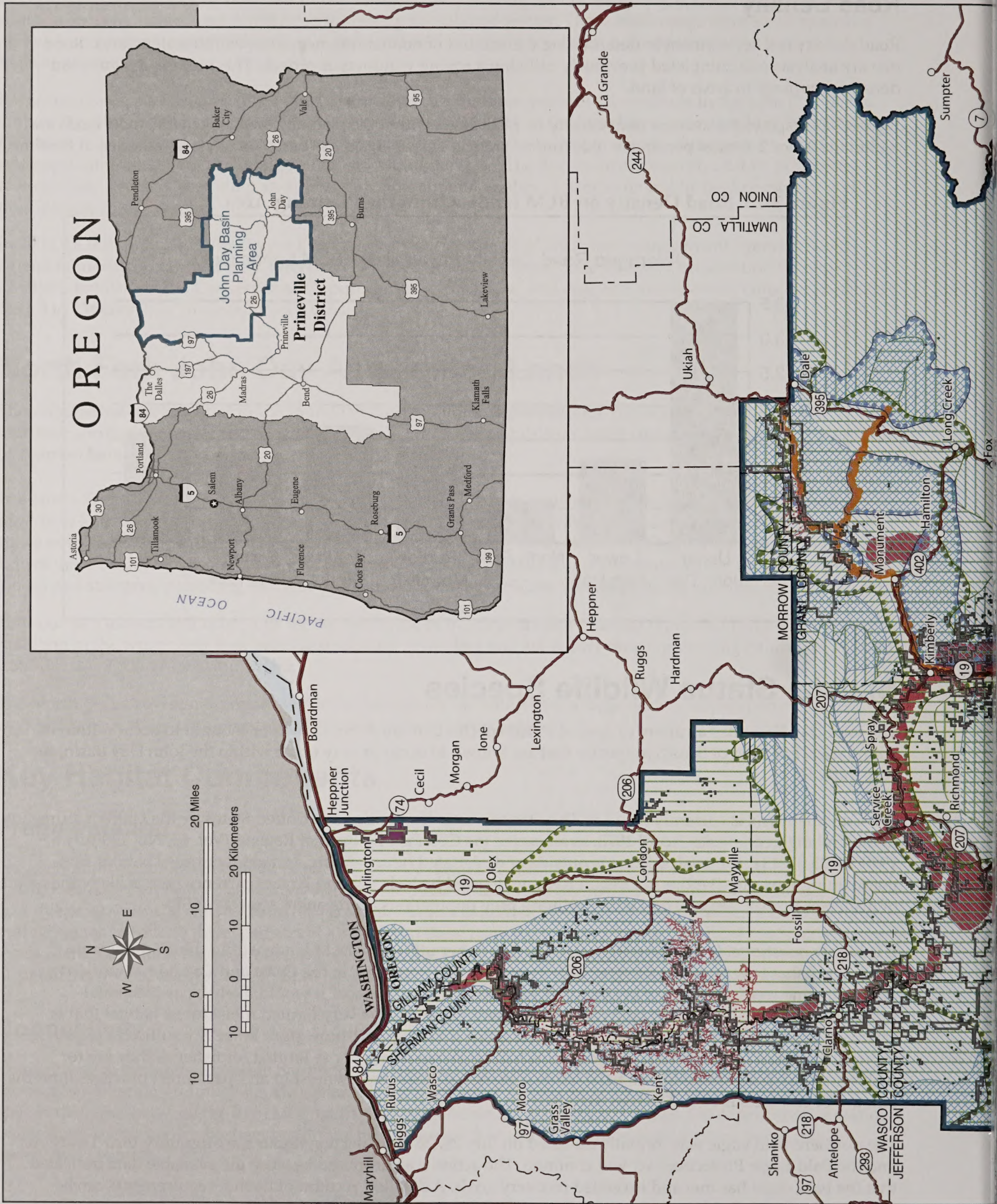
The John Day Basin has a variety of special status species that are either known or thought to occur within its boundaries. For a list of Sensitive species that are known to occur or may occur within the John Day Basin, see Appendix H.

The Canadian lynx is currently listed as Threatened across the contiguous United States by the USFWS, pursuant to the Endangered Species Act of 1973, as amended (50 CFR Part 17, Federal Register/Vol. 63, No. 130/July 8, 1998/36993-37013). The analysis area is outside of designated lynx denning, foraging, or travel habitat. Self-maintaining lynx populations in Oregon have not existed historically, and lynx occurrence here is likely the result of dispersal from occupied areas with declining prey populations (Verts and Carraway 1998).

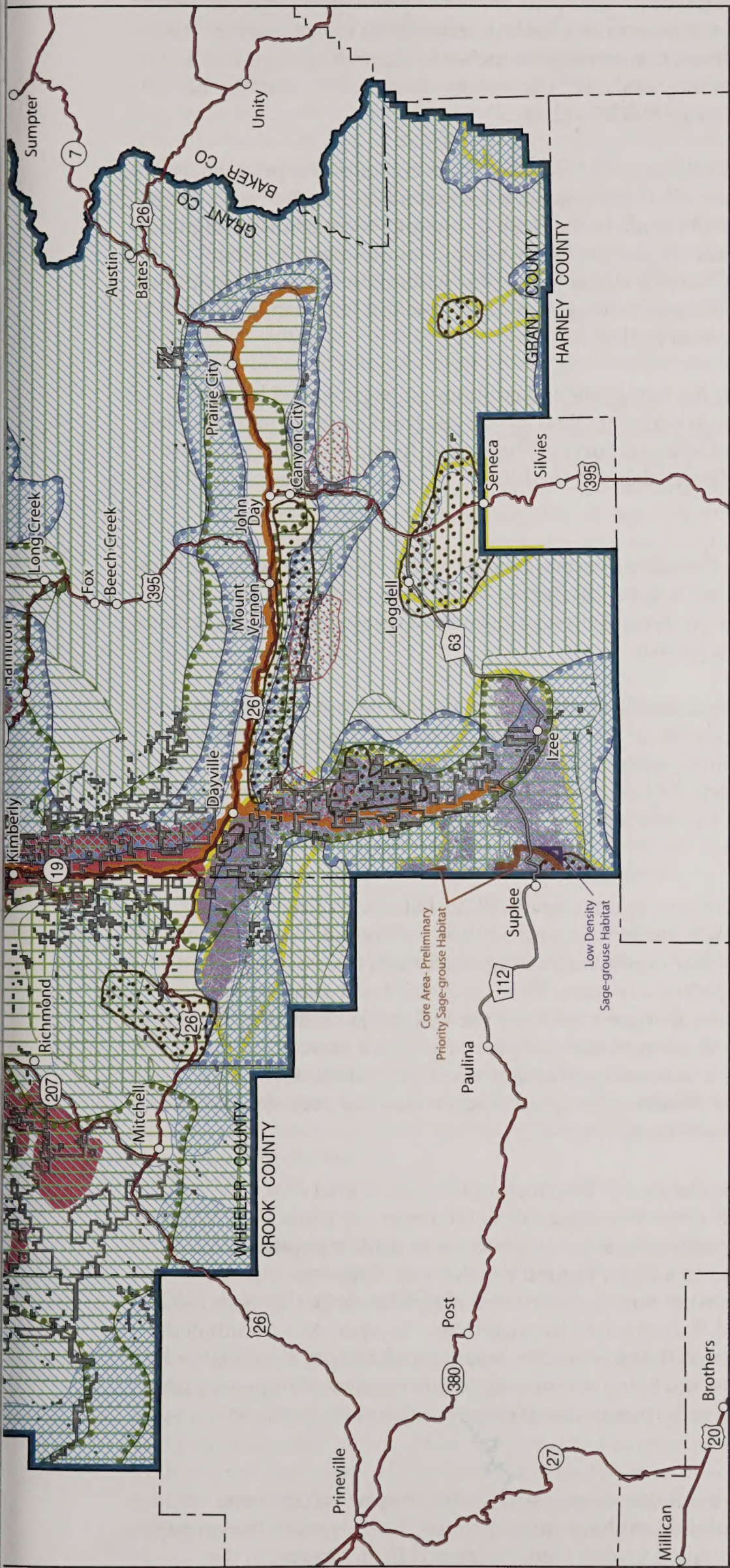
It is highly questionable if California wolverine and fisher utilize the BLM lands within the planning area at all. The fisher is very rare in Oregon with most sightings occurring in the Coast and Cascade mountains and wolverine were always rare in Oregon (Csuti 1997). If use did occur it would likely be as incidental foraging or dispersal. The BLM lands within the planning area have very limited moist forest habitat that is relatively roadless, and elevation ranges on BLM lands don't support snow pack longevity sufficient to provide reproductive sites for wolverine. Reproductive habitat elements are not as limited for fisher as they are for wolverine; however, suitability on BLM lands is marginal. Scattered ownership and past forest practices limit the amount of continuous closed canopy stands.

The northern bald eagle was formally de-listed on July 28, 2007. Protection under the Migratory Bird Treaty Act and the Bald Eagle Protection Act will continue. The action was proposed because the available data indicated that the bald eagle has met and exceeded recovery goals. A detailed account of habitat requirements can be found in the Pacific Bald Eagle Recovery Plan (USDI Fish and Wildlife Service 1986). Generally speaking, bald









LEGEND

- Elk Range

Critical Winter Range

Winter Range

Summer Range
- Mule Deer Range

Critical Winter Range

Year-round Range

Summer Range
- Big Horn Sheep Habitat

Current

Potential

- Antelope Year-round Range

Washington Ground Squirrel Habitat

Raptor Roosting and Foraging Area

Greater Sage-grouse Distribution

Sagebrush Potential Within Greater Sage-grouse Distribution
- Planning Area Boundary

Bureau of Land Management Administered Land

U.S. DEPARTMENT OF THE INTERIOR  
Bureau of Land Management



**PRINEVILLE DISTRICT**  
**John Day Basin**  
**Proposed Resource Management Plan**  
**Final Environmental Impact Statement**  
**2012**

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Map 20: Wildlife Habitats



eagle nesting territories are associated with lakes, reservoirs, or rivers. Nests are usually found in large conifers in uneven-aged, multi-storied stands and several nests are common in a nesting territory. In Oregon east of the Cascade Range, eagles prefer nesting in ponderosa pine trees that average 46 inches in diameter (range 21-76 inches) and tend to be larger than surrounding trees (Anthony *et al.* 1982). Roost stands generally average 20 inches dbh (range 13-40 inches) with a height of 91 feet (range 50-125 inches).

This species is a winter inhabitant of the John Day Basin, utilizing the John Day River corridor as a primary use area from November to March. Numerous roost areas, as well as a few known nest sites occur in the basin. There are no documented nests on BLM lands. Small tracts of BLM lands in the Rock Creek area are within a designated Bald Eagle Management Area (BEMA). The primary roosts are large cottonwood and conifer trees located throughout the river corridor. Most foraging occurs from Service Creek to the Blue Mountain Hot Springs on the main stem John Day River, with the North Fork John Day also receiving significant use. Carrion, fish, ground squirrels, and waterfowl are primary food sources of the bald eagle.

Peregrine falcon was formally de-listed in 1999; however, the peregrine will continue to be protected by the Migratory Bird Treaty Act. Peregrine falcons inhabit cliffs approximately 0.25 - 1 mile from some form of riparian habitat. In 2001 the Prineville District contracted a habitat analysis survey. The survey found no active sites but did identify 37 potential sites within the planning area. These sites had the following ratings for potential: 9 High, 3 High Historic, 17 Medium, and 8 Low (Pagel 2001).

Columbia Spotted Frog is currently considered a Bureau Sensitive species. This species is found in the South Fork of the John Day and is suspected to occur in the North Fork and its tributaries. The typical habitat is large wet meadows that remain damp during the summer months. No formal surveys have been conducted for this species; therefore the extent of the population range and size is unknown.

Yellow-billed cuckoo is currently considered a Sensitive species by the BLM. This species occupies dense closed-canopy riparian areas with various species of willows (Csuti *et al.* 1997). Patches must be > 37 acres in size with >7 acres of closed canopy. This species feeds primarily among cottonwoods. Although there are numerous cottonwood stands within the planning area, few approach the necessary patch size. Only one historic sighting in 1989 near Mt. Vernon exists in any district data base. No surveys have been conducted for this species; therefore the extent of the population range and size is unknown.

Washington ground squirrel is currently considered a Sensitive species by the BLM. Palouse Prairie habitats around Horn Butte provide some of the only habitat for Washington ground squirrel in Oregon. Washington ground squirrels inhabit grasslands and shrub steppe habitat dominated by big sagebrush, bluebunch wheatgrass, needle-and-thread grass, Idaho fescue, and Indian ricegrass. These grassland and shrub steppe habitats are considered some of the rarest ecosystems in the Oregon portion of the Columbia Plateau. Washington ground squirrels play a number of important roles in these ecosystems, as a prey species for raptors and other predators, by influencing plant community composition and structure through selective feeding, and in the creation and use of burrow habitats used by other species. Washington ground squirrels are a prey item for two state sensitive species, the ferruginous hawk and Swainson's hawk.

In 2002 the ODFW completed a study of habitats and populations in the Horn Butte area. A total of seven Washington ground squirrel sites were confirmed and all seven were located on the Fourmile Tract. Vegetation at detection sites was variable and most sites had a composite of grass and shrub communities present. 89% of the larger Horn Butte tract is comprised of Sagehill and to a lesser degree Warden soil, and since historical sightings were on this tract, it is significant that squirrels were not located here during this study (Morgan 2002). In 2000, a wildfire burned a large portion of this area and thus much of the vegetation mapped was dominated by annual vegetation (Morgan 2002). Observations indicated that squirrel abundance and activity was relatively low. However, this was a one year study with populations not being monitored during seasons of higher squirrel activity. Due to the duration of the study, the impacts of yearly precipitation on population numbers and distribution are not ascertainable.

The John Day Subbasin draft plan (BPA 2005) states that a number of terrestrial wildlife species have been extirpated from the John Day Subbasin, including the Columbian sharp-tailed grouse, the gray wolf, the grizzly bear and the California bighorn sheep. Columbian sharp-tailed grouse were extirpated from Oregon in the



1960s due to a combination of factors, including over-hunting in the mid- to late- 19th century, the conversion of native habitats to crop production and habitat degradation from livestock grazing (Hays *et al.* 1998, Crawford and Coggins 2000). Sage-grouse, a species dependent on shrub steppe habitat, were extirpated from the John Day Subbasin by 1955 because of habitat conversion, overgrazing and over-hunting (Stinson *et al.* 2003). The gray wolf and grizzly bear were both extirpated from the subbasin by the 1940s, primarily due to predator control efforts. On July 18th, 2008 ODFW confirmed the first evidence of multiple wolves and wolf reproduction in Oregon since wolves were extirpated in northern Union County outside of the planning area. USFWS was contacted in regard to wolf status and management in the planning area. The species is not considered to occupy counties applicable to the planning area. Through informal consultation USFWS stated that they agreed with a No Effect determination for wolves based on the proposed actions in the FEIS. Should wolves eventually become established within the planning area, the BLM will follow appropriate state and/or federal management or recovery objectives. California bighorn sheep were extirpated from Oregon by 1915 due to over-hunting, unregulated domestic livestock grazing, and parasites and diseases carried by domestic livestock. However, these sheep have been successfully reintroduced in many areas of the John Day Subbasin (ODFW 2003).

“Historically, California bighorns were the most abundant wild, native sheep in Oregon (Toweill and Geist 1999). They were found throughout the steeper terrain of southeast Oregon, and the non-timbered portions of the Deschutes and John Day River drainages, with the timbered regions of the Blue and Umatilla Mountains separating them from Rocky Mountain bighorn sheep. Similar to Rocky Mountain bighorn sheep, California bighorns were an important source of food and clothing for Native Americans, and were utilized heavily for food and trophies during the homesteading and early settlement periods of Oregon. Thousands of domestic sheep also were trailed across eastern Oregon, including most California bighorn habitats. This likely resulted in contact with bighorns which may have led to mortality as a result of livestock related diseases and parasites.

Attempts to protect California bighorn began as early as 1899 with regulated hunting, and in 1911 with full protection of bighorn sheep (Anonymous 1911). The Steens Mountain Game Refuge was established in southeast Oregon around 1915 because the last California bighorns remaining by this time were reported there (ODFW 2003). Unfortunately this attempt failed and California bighorns were extirpated from Oregon by 1915. Indiscriminate hunting, unregulated grazing by domestic livestock, and parasites and diseases carried by domestic livestock all contributed to the eventual demise of Oregon’s native bighorns.”

Efforts to restore California bighorn sheep to Oregon began in 1954 and eventually moved to the John Day Basin. Current population estimates and a list of release sites are described in Table 3-13.

In Oregon, most California bighorn herds are non-migratory. Herd ranges generally provide contiguous summer and winter range and sheep are therefore year-long residents not moving through areas of non-habitat. Thus dispersal and establishment of new populations in new habitats is limited. In general, California bighorn sheep prefer rugged, open habitats with high visibility of their surroundings. Survival is positively correlated with amount of cliffrock, rimrock, and rocky outcroppings. Rocky outcrops are particularly important for lambing and escape from predators.

The ODFW works with federal land managers prior to any release to ensure habitat needs are met and any conflicts with domestic sheep are analyzed and adequately addressed. Transplant sites on private land must receive landowner approval prior to release of bighorn sheep. Cooperative agreements to ensure habitat integrity of release sites and reasonable public hunting access must be in place prior to release.

Substantial amounts of historic habitat are not currently suitable for California bighorns because of long-term habitat change. For example, urbanization occupies some historic ranges and others have been converted to other uses making these sites unsuitable for bighorn sheep. Fire suppression activities throughout the last 100 years have allowed woody plants and conifers to encroach upon once open habitat, decreasing their suitability for bighorns. Because bighorns rely on their vision as a way to avoid predators, dense stands of junipers or other conifers can reduce visibility and increase predator effectiveness. Further, junipers may compete for water and nutrients needed by forage plants on desert ranges and therefore can decrease forage quantity and quality as well



**Table 3-13. Bighorn Sheep Releases and Current Population Estimates in the John Day Basin.**

Year	Location of Release	Number of Animals	Current Population Estimate
<b>Lower John Day River</b>			600–650
1989	Thirtymile Canyon	14	
1990	Horseshoe Bend	15	
1995	Jackknife Canyon	21	
1999	Little Ferry Canyon	15	
2004	Red Wall	19	
<b>Main stem and South Fork John Day River</b>			
1971	Canyon Mountain	21	Non-viable
1978	Aldrich	14	100
1981	Aldrich	4	
1988	McClellan	15	120
1992	McClellan	7	
<b>North Fork John Day River</b>			
2003	Potamus	21	49–52

as live water availability from springs and seeps. Some junipers can be beneficial by providing shade and escape cover in certain instances. However, impacts of large dense stands are generally negative.

Some historic California bighorn sheep habitat along the John Day River is not currently inhabited. Concerns about domestic sheep, mainly mouflon, spreading disease to native herds of bighorns continues to be a factor. Where these concerns can be mitigated, and where habitat is suitable, the opportunity to reintroduce California bighorn sheep into native habitats remains an option. The ODFW Bighorn Sheep Management Plan (2003) has identified several areas in the basin where California bighorn sheep populations could be reintroduced or supplemented. The Prineville BLM in conjunction with ODFW will be mapping existing and historic habitats, as well as identifying specific habitats for restoration.

The greater sage-grouse is currently considered a Special Status species by the BLM. On March 5, 2010, the U.S. Fish and Wildlife Service announced that federal listing of greater sage-grouse (range-wide) is warranted, but precluded by higher listing priorities. Sage-grouse is, therefore, also managed as a Candidate species. The species is classified by the State of Oregon as Sensitive (subcategory: Vulnerable). Oregon State BLM, ODFW, Audubon Society, and the U.S. Fish and Wildlife Service have worked together to define criteria that identify priority sage-grouse habitats in Oregon. Based on review of preliminary mapping, no priority habitats are identified on BLM lands within the John Day Basin Planning Area.

The John Day Subbasin draft plan (BPA 2005) states that greater sage-grouse, a species dependent on shrub steppe habitat, were extirpated from the John Day Subbasin by 1955 because of habitat conversion, overgrazing and over-hunting (Stinson *et al.* 2003). However, there have been reports of more recent sightings and there is potential for occupied habitat in the sagebrush uplands along the South Fork John Day River and areas around Dayville. In 2005 the BLM contracted ODFW to survey the South Fork John Day lands in an attempt to better determine greater sage-grouse use and abundance in this area. No additional sightings were recorded. Additional surveys will be required to obtain better population and distribution data.

Greater sage-grouse historically inhabited much of the sagebrush-dominated ecosystems of North America. Today, the greater sage-grouse population abundance and extent have declined throughout most of their historical range. Population dynamics of greater sage-grouse are marked by strong cyclic behavior; however, in the last 30 years, the peak in the cycle of bird numbers has declined. The ODFW allows a permit based harvest of 5% or less of greater sage-grouse populations.



Habitat requirements for greater sage-grouse vary greatly depending on the season and life-history stage. Key habitat components include adequate canopy cover of tall grasses and medium height shrubs for nesting, abundant forbs and insects for brood rearing, and availability of herbaceous riparian species for late growing season foraging.

## Resource Trends

In general, both the quantity and quality of natural wildlife habitat in the John Day Basin have declined since Euro-American settlement. Among the many causes for this decline was historic logging and grazing practices, wildfire suppression, drought, agricultural conversion, weed invasion, human expansion into rural areas, and recreational activities. Habitats are constantly changing with new disturbances, both natural and unnatural. Some species have increased with these disturbances; others have declined.

## Regional Context

Habitat conditions and trends within the John Day Basin are consistent with the finding of The Interior Columbia Basin Ecosystem Management Plan (ICBEMP). That plan took a broad view of wildlife habitats across the entire Columbia Basin through the late 1990s and early 2000s. In 2005 the Bonneville Power Administration (BPA) did a tiered analysis at a finer scale focusing on the John Day Basin.

The BPA report made several observations: Reduction of cover and vigor of big sagebrush, antelope bitterbrush, and other shrubs, grasses, and forbs by juniper can have negative impacts on a multitude of wildlife species, including critical big game winter range. Western juniper can be an important element in the habitat for many wildlife species, but at densities that allow a healthy understory of shrubs and grasses (Miller 2001). Once juniper becomes dominant on sites, understory species cover and vigor declines. Increasing juniper dominance at both the community and landscape levels will result in a general decline in plant and community diversity, resulting in a decline of wildlife abundance and diversity (Miller *et al.* 2005). Reduction of cover and vigor of big sagebrush, antelope bitterbrush, and other shrubs, grasses, and forbs by juniper can have negative impacts on a multitude of wildlife species, including ground nesting migratory birds and critical big game winter range.

## Unique or Key Features

- Winter Range - Critical big game winter ranges exist on the North and South Forks of the John Day River.
- Caves - Wildhorse Point Cave has confirmed use by western big-eared-bats. There are several smaller openings in rock structures along the Main stem, North Fork, and South Fork of the John Day River that have not been surveyed with roosting potential.
- Cliffs - Steep cliffs along the North and South Forks and the main stem of the John Day provide potential habitat for nesting golden eagles, prairie falcons, and peregrine falcons.
- The Horn Butte ACEC was designated for its long-billed curlew nesting habitat; a management plan was prepared in 1989 proposing land acquisition, livestock management, noxious weed control and closure of the area to off-road motorized use. Since 1989 approximately 80% of the ACEC has been burned by wildfire.
- Palouse Prairie habitats around Horn Butte provide some of the only habitat for Washington ground squirrel in Oregon.
- Lewis' Woodpecker habitat exists on the North Fork of the John Day.
- Wintering bald eagle habitats exists on the North Fork of the John Day.

## Amphibians and Mollusks

There are two special status species of amphibians known to be in the Prineville District. The Oregon spotted frog (*Rana pretiosa*) and the Columbia spotted frog (*Rana lutieventris*). Another species, Cope's giant salamander (*Dicamptodon copei*), is possibly on the district on the White River, but this has not been confirmed. Only the



Columbia spotted frog is within the planning area. It occupies streams and ponds in the upper John Day basin with shallow still water and low vegetation.

There are six species of special status mollusks known to be in the Prineville District. Three of these are aquatic snails, the barren juga (*Juga hemphilli hemphilli*), the purple-lipped juga (*Juga hemphilli maupinensis*), and The Dalles juga (*Juga hemphilli dallesensis*). All of these snails are found outside of the planning area in the Deschutes River Basin or the Columbia River Gorge west of The Dalles.

Three of the mollusk species are terrestrial. Two of these, the Deschutes mountain snail (*Oreohelix variabilis* ssp. nov.) and the Deschutes sideband, are restricted to the Deschutes River Basin and are not found in the Columbia Gorge. The third species, The Dalles mountain snail (*Oreohelix variabilis*), is found in and within 10 miles of the Columbia Gorge in the central and eastern part. This snail lives in talus piles on northern aspects on the Oregon side of the Columbia gorge. The talus is often associated with springs although it usually occupies only the margins of those springs. One of the historic sites for this species is in the vicinity of Biggs Junction. Although recent attempts to collect this species at the site failed (Frest and Johannes 1995), there is a possibility that populations still exist along the gorge and along the lower John Day River.

In 1995, Deixis Consultants summarized what was known about freshwater and terrestrial snails in the interior Columbia Basin (Frest and Johannes 1995). This document listed approximately 200 snails that might be sensitive; many of these have not been fully described or named to species. Most major subbasins were found to have at least a few sensitive species and some had many. The John Day Basin however had no listed species. Frest and Johannes state that in the Oregon interior basins "there is no indication of land snail endemism in this region, although this is likely partially due to lack of careful exploration." Only the Dalles mountain snail (*Oreohelix variabilis*) was cited as a species possibly found in the planning area.

The Blue Mountains is listed by Frest and Johannes as a center of endemism; however, they state that "This region was unfortunately not well explored in the early phase of western malacology and is now heavily impacted."

It appears that neither the upper John Day Basin in the region of the North Fork John Day or the lower part of the basin have been well explored in the past and it therefore seems likely that other sensitive species of mollusks will be found in the planning area once those areas are adequately surveyed.

## Wild Horses

The only wild horses in the planning area are located in the Murderer's Creek Herd Management Area. The herd management area spans 108,568 acres and is managed under the Wild Free-Roaming Horses and Burros Act of 1971, which mandates that these horses be managed in a thriving ecological balance with the land and as part of the natural landscape. The Bear Valley Ranger District of the Malheur National forest has primary responsibility for managing this herd and annually inventories the Murders Creek wild horse population with a ground census. The Appropriate Management Level for this herd management area ranges between 50-140 wild horses. The wild horse herd averages about 100 head.

The lineage of the Murderer's Creek horses is diverse. Part of the lineage of horses found in the area by early explorers probably escaped from Indian herds assembled from horses escaped from or released by Spanish Conquistadors. It is also likely that many of the Murderer's Creek horses are descendants of animals lost or turned loose by settlers and ranchers.

Wild horse herds increase at a rate of 22-23 percent per year, so their populations, without controls, double about every 4 to 5 years. Wild horses have few natural predators, except for humans and mountain lions. Prior to the enactment of the Wild Free-Roaming Horse and Burro Act of 1971, wild horses were not federally protected species. Herd numbers were controlled by ranchers and by mustangers who hunted the horses or gathered them for sale. After the Act, the population control has been by mountain lions and the managing agencies, the Forest Service and Bureau of Land Management.



Mountain lions do an adequate job of controlling wild horse numbers in only a few locations. The size of most herds must be controlled by the managing agencies in order to protect the land from overgrazing and to protect the horses from eventual starvation due to overgrazing. It is for the health of the land and the health of the animals that excess wild horses are removed from their territories.

## Wilderness Characteristics

The BLM reviewed and updated the wilderness inventory for 360,534 acres of public lands outside of designated Wilderness and Wilderness Study Areas, including the BLM lands contained in 13 citizens' wilderness proposals. Between the release of the Draft RMP/EIS and this document the BLM released new Wilderness Characteristics Inventory guidance (IM 2011-154). The BLM has determined that inventory updates already conducted within the planning area used the same Wilderness Act criteria and are fully consistent with IM 2011-154. Further inventory is not necessary at this time.

Pursuant to 40 CFR § 1502.21, the BLM hereby incorporates its wilderness inventory update and evaluation of the 13 citizen proposed wilderness proposals by reference. These documents are available for review at the Prineville District Office and on the planning Website at <http://www.blm.gov/or/districts/prineville/plans/johndayrmp/jdbdocuments.php>. The wilderness inventory update considered the standard wilderness criteria of size, naturalness, and outstanding opportunity for solitude or primitive, unconfined recreation as described in Section 2(c) of the Wilderness Act. The BLM used multiple information sources to complete the wilderness inventory update, including an in-house interdisciplinary team with field knowledge of the areas, aerial photographs, BLM databases containing records of rights-of-way, mineral leases, mining claims, road improvements, and vegetation treatments, and other tools to make their findings. BLM staff made site visits to the field where more information was needed to validate their inventory findings and to follow up on public comments received in the Draft JDBRMP regarding wilderness characteristics. The BLM identified and evaluated 36 inventory units. Complete inventory reports including maps, inventory evaluation forms, and road analysis forms were completed for each BLM inventory unit. The BLM also evaluated 13 citizen wilderness proposals and prepared a summary comparing the citizen proposal with BLM's findings.

The following summarizes the BLM's wilderness characteristics inventory update findings:

**Wilderness characteristics were found on all acres of the following inventory units:**

- Back Creek, Young Creek, Thirtymile Creek, Big Canyon, and Clark Canyon.

**Wilderness characteristics were found on a percentage of the following inventory units:**

- Birch Creek (99.8%), Little Aldrich Creek (82%), Deep Creek (85%), Sutton Mountain WSA Addition (64%), Lower John Day WSA Addition (91%), Pat's Cabin WSA Addition (71%), Wylie Gulch (53%), Cottonwood Creek (11%), Sheep Rock (6%), Rudio Mountain (31%), and Wall Creek (6%).

**Wilderness characteristics were not found to exist in the following inventory units:**

- Capsutte Creek, Stephenson, Dry Cabin Creek, Black Canyon Wilderness Addition, Frazier Creek, Aldrich Mountain Addition, Mitchell Landing Strip, Esau Canyon, Little Canyon Mountain, Dixie Creek, Bill's Place, Clarno South, Starvation Lane, Priest Hole, Gable Creek, Horse Heaven, Sand Mountain, Black Snag Springs, Bone Point, Spring Basin WSA Addition, Stoney Creek, and North Pole Ridge WSA Addition.

A total of 35,457 acres (outside of areas previously identified as Wilderness or Wilderness Study Areas) of BLM managed lands were found to contain wilderness characteristics. Alternative 4 on Map 7 displays all lands with wilderness characteristics. Detailed inventory findings are contained in the above referenced inventory files.

Of the 13 citizen proposals for new wilderness study areas received by BLM, the BLM wilderness inventory update found portions of 9 of the citizen proposed areas to possess wilderness characteristics. Those portions of the citizen proposed areas that were determined by BLM to lack wilderness characteristics were eliminated by BLM primarily due to the presence of roads or human activities not identified in the citizen proposals. The BLM found that four of the citizen proposals lacked wilderness characteristics in their entirety.



Summary comparison of Citizen's Proposed WSAs and BLM's Findings:

- Branson Creek proposal - Portions of the unit were determined to lack wilderness character due to roads and a narrow irregular shape that severely restricts opportunities for solitude or primitive, unconfined types of recreation.
- Cottonwood Creek proposal - Portions of the unit were determined to lack wilderness characteristics due to roads, noticeable evidence of past timber harvest, and a narrow shape.
- Ferry Canyon Addition proposal - A small portion of the unit was determined to lack wilderness characteristics due to the presence of a road.
- Lower John Day Addition proposal - Portions of the unit were determined to lack wilderness characteristics due to a road and an active power line right-of-way.
- Murderer's Creek proposal - Portions of the unit were determined to lack wilderness characteristics due to roads and substantially noticeable vegetative treatments.
- North Fork John Day proposal - Portions of the unit were determined to lack wilderness characteristics due to roads and substantially noticeable evidence of past timber harvest.
- North Pole Ridge Addition proposal - The unit was determined to lack wilderness characteristics due to a road that separates the unit from the existing North Pole Ridge WSA. The remaining lands do not meet the minimum size requirements.
- Painted Hills proposal - The unit was determined to lack wilderness characteristics due to noticeable evidence of a large juniper cut area located in the center of the inventory unit.
- Pat's Cabin Addition proposal - Portions of the unit were determined to lack wilderness characteristics due to noticeable evidence of a juniper cut area located near one edge of the inventory unit.
- Sheep Rock proposal - Portions of the unit were determined to lack wilderness characteristics due to the presence of roads and a narrow shape that severely restricts opportunities for solitude or primitive and unconfined types of recreation.
- Sorefoot Creek proposal - The unit was determined to lack wilderness characteristics due to roads, power lines, current mining activity, a narrow shape, and private inholdings.
- Thirtymile Addition proposal - Portions of the unit were determined to lack wilderness characteristics due to a natural gas pipeline right-of-way that separates most of the unit from the existing Thirtymile WSA. The remaining lands do not meet the minimum size requirements.
- Wind Creek proposal - All of the unit was determined to lack wilderness characteristics as it did not meet the minimum size requirement or any of the exceptions to the 5,000-acre size criterion.

In addition, the BLM wilderness inventory update found wilderness characteristics on 13,720 acres that were not included in the citizen proposals. These additional acres were identified primarily in the BLM's Big Canyon, Birch Creek, Clark Canyon, Sutton Mountain WSA Addition, and Wylie Gulch wilderness inventory update units. Subsequent to BLM providing a summary comparison of its findings to those of the citizen proposals, the BLM met with the proponents and explained the rationale specific to areas where there was disagreement between the inventories. The BLM has since received a letter from the proponent restating their disagreement with BLM's findings; however, they provide no new information that was not previously considered in BLM's original evaluation.

## Cave Resources

Many resources are associated with cave features, including critical wildlife habitat, cultural resources, recreation opportunities, and paleontological resources. "Cave" is defined as any naturally occurring void, cavity, recess or series of connected passages beneath the surface of the earth or within a cliff or ledge large enough to allow a person to enter. It includes any natural pit, sinkhole, or other feature that is an extension of the entrance. Caves in the planning area have the potential to be significant as winter hibernacula or maternity roost sites for bats.



Caves in the planning area include features such as lava tubes, caves formed by pressure ridges associated with lava flows, and piping caves formed by moving water eroding insoluble rock. The locations of caves nominated for significance are considered confidential under the Federal Cave Resources Protection Act (FCRPA). Information concerning the specific location of any significant cave may not be made available to the public unless the disclosure of this information would further the purposes of the FCRPA and would not create a substantial risk of harm, theft or destruction of such cave.

Wildhorse Point Cave is the only known cave on BLM public land within the JDBRMP area determined to be significant by the BLM. This cave provides habitat for the western big-eared bat. The condition of Wildhorse Point Cave was excellent in the mid-1990s when it was inventoried.

## Visual Resources

The John Day River Basin contains an abundance of high quality scenery. The variety of landscapes across the basin provides a visual smorgasbord for residents and visitors. The 13 subcoregions within the planning area provide scenery that ranges from broad vistas of rolling grassland, to rugged canyons, to mountain peaks flanked by forests. While much of the area appears to be relatively undisturbed, logging, grazing, fire suppression, mineral extraction, and the creation of infrastructure such as roads and utilities have left an imprint on the land and on the overall scenic quality. However, no major developments affect the visual resource values on public lands within the basin. The sparse population and relatively small population centers have left much of the region relatively natural appearing.

Both Congress and the BLM identified scenery as an outstandingly remarkable value for the federally designated John Day and South Fork John Day Wild and Scenic Rivers. Also, portions of the John Day River and its tributaries (North Fork, Middle Fork, and South Fork) have been designated as State Scenic Waterways under the Oregon Scenic Waterways Program.

The John Day River Canyon is a key visual element within the planning area. This canyon is generally primitive and undeveloped. Here the John Day River slices through a high basalt plateau; winding alternately through gentle farm valleys and a 1,000-foot deep canyon, cutting through a layer cake of basalt cliffs and steep rugged hills. Lush green riparian vegetation at the river's edge contrasts with green-golden hills of grass, sagebrush, and juniper in the summer and fall.

Exposed volcanic ash deposits and the erosion and oxidation of basalt columns have created unusual colors and interesting formations that have become scenic landmarks for river visitors floating the canyon. Tumultuous in its headwaters, the river is mostly calm in the lower reaches, though punctuated by the occasional rapid. In the summer as runoff dwindles, rapids become riffles and runs become long twisting ponds with little current. Sandy beaches and gravel bars appear at low water flows.

The North, Middle, and South Forks of the John Day River are also striking river canyons with varying basalt outcrops, vegetation and erosive features with high scenic beauty. Canyons along these river segments include vertical cliffs more than 500 feet high, composed of dramatic basalt rock outcrops.

Vegetation ranges from fir and pine trees in the uplands to high desert communities of sagebrush and juniper in the lowlands. Small outposts of different vegetative communities dot the landscape along the South, North, and Middle Forks of the John Day River and provide variety and a contrast for the eye. Ranches, intermingled with public lands, add an interesting contrast.

Sutton, Rudio and Stephenson Mountains are also prominent landscape features in the planning area. These landscapes are towering landforms, weathered over time. The remaining public lands contain important visual elements and contribute to providing open space views on plateaus and rolling hills.



The *Status of the Interior Columbia Basin; Summary of Scientific Findings Report* (USDA-Forest Service 1996) contained several points of interest regarding scenic quality trends within the Columbia Basin consistent with the John Day Basin:

"By the year 2045, the most value to the increasing and older human population will be provided by (in decreasing order) motor viewing, day use, trail use, fishing, and hunting (p. 52)."

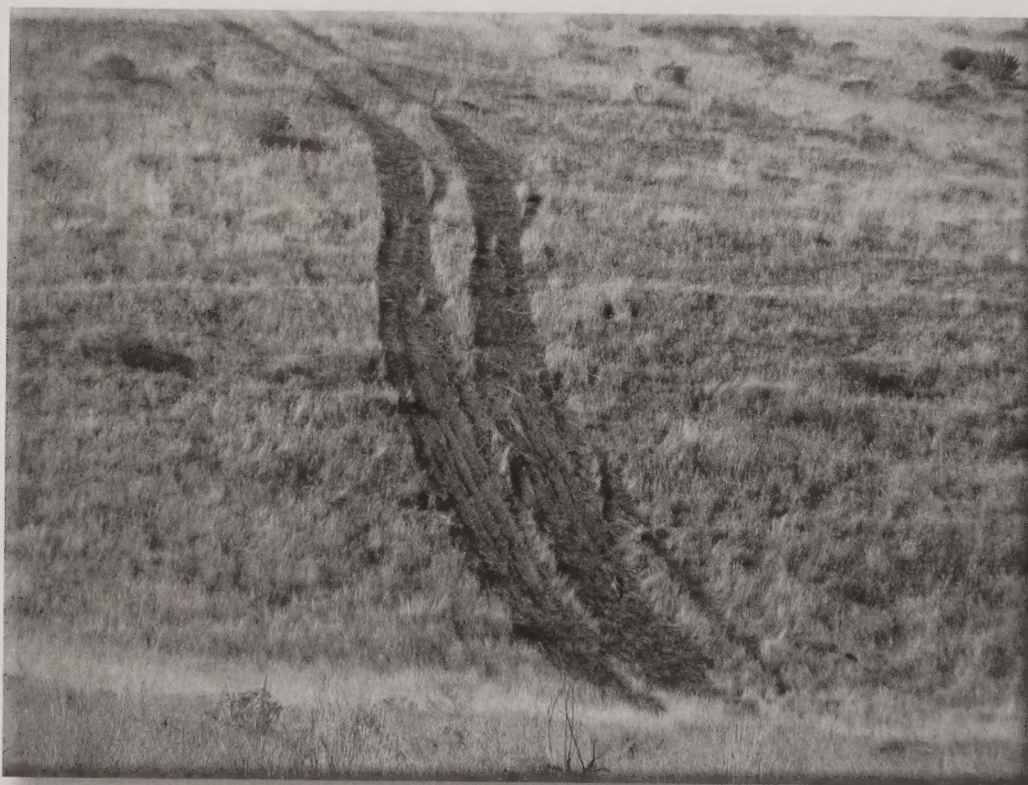
"Scenic integrity is reflected by the 'visual intactness' or wholeness of the landscape. Scenic integrity is not the same concept as scenic beauty, but research shows people frequently perceive scenic integrity and scenic beauty to be the same thing. Scenic integrity of USFS and BLM public lands were rated as: a) 42% very high, b) 33% high, c) 17% moderate, d) 7% moderately low, and e) 1% very low (p. 54)." This ranking shows that the majority of USFS and BLM public lands have a natural-appearing landscape, rather than a disturbed appearance.

"... Local publics will be expected to continue to express preferences for stability in scenery and lobby to have projects put in someone else's back yard ... (p. 140)."

All public lands within the planning area have been inventoried according to the guidelines for BLM's Visual Resource Management (VRM) program. Inventoried public lands were assigned VRM management classes through the Two Rivers, John Day, and Baker RMPs/EISs process and the plan amendments instituted via the John Day River Management Plan. Visual resource inventories are on file at the Prineville District Office.

Where steep natural barriers prevent motorized vehicle use, BLM lands have generally retained a higher level of natural appearance. In areas where the terrain makes motorized use feasible, new vehicle routes have been created, both authorized and unauthorized. The creation of new vehicle routes has affected the scenic quality of some areas, including public lands around Canyon City, Dixie Creek, South Fork of the John Day, and Rudio Mountain. Wilderness Study Area Interim Management guidelines that restrict motorized use to designated routes continue to be violated by some public land users and some adjacent private landowners. These activities also reduce the natural character of the landscape by creating new OHV routes.

**River Mile 47 west bank John Day River, Lower John Day  
Wilderness Study Area/John Day Wild and Scenic River.  
Unauthorized vehicle route scars.**





# Special Designations

## Areas of Critical Environmental Concern

BLM has two Areas of Critical Environmental Concern (ACECs) in the John Day Basin planning area: Horn Butte Curlew and Spanish Gulch. Both were designated through the Two Rivers RMP/EIS in 1986. These ACECs are shown on Map 9: Special Management Areas in Chapter 2.

Horn Butte Curlew ACEC is approximately 6,000 acres and is located five miles east of Arlington, in the extreme northeast corner of the planning area. Designated for its long-billed curlew nesting habitat, a management plan was prepared in 1989 proposing land acquisition, livestock management, noxious weed control and seasonal closure of the area to off-road motorized use. Implementation of all planned actions except OHV management is ongoing.

Since 1989 approximately 80% of the ACEC has been burned by wildfire. Long-billed curlew nesting habitat, consisting mostly of sites dominated by perennial grasses, has generally been enhanced. However, the shrub steppe, as expected, has been converted to sites dominated by annual species, including noxious weeds (yellow starthistle and medusahead). Approximately 1,500 acres has been reseeded to perennial grasses, although establishment has been poor. Weed control is ongoing. Restoration of this area to shrub steppe and enhancement of its curlew habitat remains an ongoing process.

Spanish Gulch was designated an ACEC for its historic values. This ACEC is approximately 333 acres and is located approximately 12 air miles west-southwest of Dayville, Oregon, just north of the Ochoco National Forest. In the 1860s this was the site of active gold mining, following discovery of gold in the Canyon City area to the east. When the Spanish Gulch area was designated an ACEC, numerous historical structures remained on site, including a mill, storage buildings and residences. Since designation, little has been done to manage or protect this area and the structures have fallen further into disrepair. Spanish Gulch has been determined to be relevant but not important; it is not unique, although it was nominated to the National Register of Historic Places at the State level of significance primarily as a representative example of late 19th and 20th century hydraulic and lode mining equipment. Any remnants on site date from the early 1900s to 1930s and consequently are not representative of the 19th century. There are no active mining claims at present and the lack of public access serves to protect the site from disturbance.

## Wilderness

Portions of six federally designated Wilderness areas are within the planning area: the U.S. Forest Service manages the North Fork John Day, Black Canyon, Monument Rock, Strawberry Mountain, and Bridge Creek Wilderness areas and the BLM manages Spring Basin Wilderness. The former Spring Basin Wilderness Study Area, located about six miles southeast of Clarno, was federally designated as Wilderness on March 30, 2009. The North Fork John Day Wilderness is located along the upper North Fork, Black Canyon Wilderness is located on the west side of the South Fork John Day, Monument Rock Wilderness is located at the southern end of the Blue Mountains, Strawberry Mountain Wilderness is located southeast of John Day and Canyon City, and Bridge Creek Wilderness is located in the Ochoco Mountains south of Mitchell.

Seven Wilderness Study Areas (WSAs) have been identified by the BLM within the planning area. The Strawberry Mountain WSA (1,151 acres) consists of three individual units that abut the north and west boundaries of the Strawberry Mountain Wilderness Area (USFS). The Aldrich Mountain WSA (9,131 acres) is located on the east side of the South Fork John Day River near Dayville. The North Pole Ridge WSA (7,300 acres) is located north of Clarno on the main stem. Further north along the main stem is the Thirtymile WSA (7,625 acres) and the Lower John Day WSA (25,393 acres). Two additional WSAs, Sutton Mountain (28,894 acres) and Pat's Cabin (9,778 acres) are located just south of the main stem John Day River near Bridge Creek.

In the Wilderness Study Report (USDI-BLM 1991), the BLM recommended that most of the acres contained in four WSAs be designated as Wilderness by Congress including Thirtymile, Lower John Day, North Pole Ridge, and Spring Basin. The report did not recommend Wilderness status for the Strawberry Mountain WSA or the



Aldrich Mountain WSA. Lands acquired after 1991 were inventoried for wilderness characteristics, and those found to meet the WSA criteria, including Sutton Mountain WSA, Pat's Cabin WSA, and a 1,240-acre addition to the North Pole Ridge WSA, were amended to WSA status through earlier planning documents.

Currently, the BLM attempts to conduct WSA monitoring throughout the high use seasons, and enforcement occurs as funding and personnel allow. The largest threat to the WSAs is the unauthorized use of motorized vehicles and the creation of new routes through this use. Off-road motorized trespass is presently occurring to some degree in most Wilderness Study Areas within the planning area. This unauthorized OHV use is usually associated with hunting, scouting for game, or horn hunting, and the routes often originate from adjacent private land. Other threats to Wilderness Study Areas include the unauthorized cutting of old-growth juniper trees associated with the construction of hand-crafted juniper furniture and unauthorized motor vehicle use by pilots landing single engine aircraft on sagebrush flats along the river. The BLM has investigated cases where chainsaws have been used to remove vegetation to facilitate landing, aircraft tie-downs have been installed in the ground, and chainsaw fuel containers have been stashed.

## Wild and Scenic Rivers

On BLM-managed public land in the planning area, there are two segments of river designated as Wild and Scenic (Omnibus Oregon Wild and Scenic Rivers Act of 1988, Public Law 100-558). These segments are described below, and shown on Map 9: Special Management Areas. For a complete description of the existing Wild and Scenic River segments, see the John Day River Plan (USDI-BLM, 2000).

- **Lower John Day River Main stem** from Tumwater Falls upstream to Service Creek (river mile 10 to river mile 157) is classified as "Recreational" and flows through a number of colorful canyons, broad valleys, and breathtaking terrain. A recreational river is defined as a river or section of river that is readily accessible by road or railroad that may have some development along their shorelines and that may have undergone some impoundment or diversion in the past. This segment offers notable steelhead and smallmouth bass fishing; mostly flat water boating punctuated with a few rapids; and sites of archeological, historical and paleontological interest. Scenery, Recreational Opportunities, Fish, Wildlife, Geology, Paleontology, and Archeology have been identified as Outstandingly Remarkable Values associated with this 147-mile section of the river.
- **South Fork John Day River** from Smokey Creek upstream to the Malheur National Forest boundary (river mile 6 to river mile 52) is classified as "Recreational" (see above definition) and offers outstanding scenery, hunting, hiking, swimming and camping. Scenery, Recreational Opportunities, Fish, Wildlife, and Botany have been identified as Outstandingly Remarkable Values associated with this 47-mile river segment.

Trends in the condition of BLM managed Wild and Scenic River (WSR) within the planning area have been largely positive. Implementation of Wilderness Study Area interim guidance (USDI BLM, 1995), the John Day River Management Plan guidance (USDI BLM, 2001c), and a joint BLM and NPS Law Enforcement Ranger have helped to protect Outstandingly Remarkable Values such as scenic quality, recreation, fisheries, camping and dispersed recreation on the main stem and South Fork John Day Rivers. Changes include improved communication with users, an emphasis on Leave No Trace ethics, improved riparian habitat through compatible grazing management, and increased onsite management of these rivers.

In addition to the segments of WSR on BLM managed land, there are several WSR segments that cross USFS managed public land within the planning area:

- **North Fork John Day River** from its headwaters downstream to Camas Creek, managed by the Umatilla National Forest. One portion of this segment is classified as "Wild;" two portions are classified as "Scenic;" and two are classified as "Recreational." This segment runs through forested land, and the river's cold waters are important for rearing of anadromous fish. The diverse landscape provides important wildlife habitat, high quality scenery, and recreation opportunities. Old homesteads, remnants of mining activity, and other man-made structures have a primitive appearance that testifies to a rich history including an era of gold exploration that began in the 1860s.



- **Malheur River and the North Fork of the Malheur River**, managed by the Malheur National Forest. The outstandingly remarkable values on these segments include fisheries, wildlife, recreation, scenery, and geology.

These are the existing WSRs within the planning area. Prior to beginning the John Day Basin RMP, the BLM also considered whether additional segments might be eligible for WSR designation. In May 2005, the BLM Prineville District reviewed 1,400 miles of waterways on BLM public land within the John Day Basin planning area. The District also evaluated data from the Northwest Rivers Study, the Northwest Power Planning Council Protected Rivers, and the Nationwide Rivers Inventory (USDI-NPS 2004).

After initial evaluation, the list of potential segments was narrowed to 18 waterways totaling about 93 miles. The BLM enlisted a private contractor with eligibility assessment expertise to conduct a detailed inventory of these waterways to determine if they met WSR eligibility criteria. This assessment determined that North Fork John Day River bounded by BLM managed lands between river mile 20.43 North of Monument and the confluence of Camas Creek met eligibility criteria (see Appendix I-1 for the complete eligibility assessment and Appendix I-2 for the Eligibility Decision).

There are also segments of river on BLM managed public land that are considered State Scenic Waterways (SSW). The SSW program is administered by the Oregon Parks and Recreation Department, which has developed both statewide and river specific rules. These rules specify management objectives for development and uses within SSW corridor to maintain the natural beauty of the river. About 317 miles of the John Day River are included in this program.

## Special Road Designation

### State Scenic Byway

The Journey Through Time Scenic Byway, designated by the Oregon Department of Transportation, is approximately 286 miles long and starts at Biggs, Oregon and ends in Baker City. This Scenic Byway explores the history and geology of the route, connecting small towns from north-central Oregon to Baker City and the Oregon Trail Historic Center in eastern Oregon.

### BLM Back Country Byway

The BLM's Back Country Byways program designates special roads that cross BLM land and are noted for their scenic attributes. There are two types of Back Country Byways. Type 1 byways have a paved or all-weather surface. Type 2 byways are generally not paved but frequently have improved gravel surface.

The South Fork John Day River Back Country Byway is the only BLM byway within the JDBRMP. This byway parallels the South Fork of the John Day River through its windy canyon for approximately 50 miles from Dayville to the Malheur National Forest boundary. Fishing, hiking, primitive camping, and excellent views are available along this roadway.

### Forest Service Scenic Byways

The Blue Mountain Scenic Byway offers a variety of scenery along with historical sites and numerous recreational opportunities. Several sites of national or state significance are the crossing of the Oregon Trail (a National Historic District), the Wild and Scenic John Day River, and the North Fork John Day Wilderness. Also located along this route is a state-managed wildlife area and remnants of historic mining activities and settlements. The area traversed by this scenic route contains one of the largest Rocky Mountain elk herds in the nation.

The Elkhorn Scenic Byway is located on the Wallowa-Whitman National Forest. This Scenic Byway is a 106-mile loop through the Elkhorn Mountains—a country rich in scenery, history, geology, and natural resources. Different recreational opportunities are available along the way, including hunting, fishing, camping, picnicking, boating,



skiing, and hiking. Special points of interest include gold mining operations and the historical narrow-gauge railroad grade. Signs along the way mark special points of interest and road junctions. The entire route is paved; however, in the winter the route is not snowplowed between Granite and Anthony Lakes.

## **Research Natural Areas**

There are no Research Natural Areas within the planning area.

## **Other Areas Designated for Special Management**

The Phillip W. Schneider Wildlife Management Area (formerly Murderer's Creek Wildlife Management Area) was established along a portion of the South Fork John Day River in 1972 by the ODFW and the BLM to better manage mule deer winter range. The area is now used by mule deer, elk, and bighorn sheep year-round and pronghorn during all but the winter season. Several thousand mule deer use the area during severe winters. This area also provides habitat for wild turkey, chukar, mountain quail, California quail, and a host of neotropical migratory birds.

The State of Oregon established the John Day Wildlife Refuge in 1933 along the lower main stem of the John Day River. The primary purpose of this refuge is to protect wintering and nesting waterfowl. It includes all land within 0.25 mile of the John Day River mean high water line from the Columbia River upstream to Thirtymile Creek. No waterfowl hunting is allowed in this area. The area is open to deer and upland game bird hunting during authorized seasons, but hunting of these species on private lands within the refuge requires landowner permission.

## **Paleontology Resources**

The BLM's Paleontology Resource Management Program is responsible for managing fossil resources on lands it administers. Management is directed primarily by provisions in the Federal Lands Policy and Management Act of 1976, the National Environmental Policy Act of 1969, a variety of other federal regulations and policies, and the BLM's Paleontology Resource Management manual (8270 and H-8270-1, as amended by the appropriate Instruction Memorandum). The objective of paleontology resource management is to facilitate the appropriate scientific, educational and recreational use, such as research and interpretation.

Paleontology resources on public lands are considered a fragile and non-renewable scientific record of the history of life on earth, and so represent an important and critical component of America's natural heritage.

There are three main types of fossil resources, vertebrate (representing animals with backbones), invertebrate (animals without backbones) and botanical (leaves and wood). These include trace fossils, which consist of skin impressions, burrows, casts and trackways. Locations on the ground where fossils occur are known as localities, not sites. Geologic settings may also constitute a paleontological resource when associated with fossils or significant processes that created contexts for fossil preservation.

Fossils tend to be associated with areas of land that have no or very little vegetation and expose the underlying rock layers. Sometime this is in small areas measured in square feet or larger areas encompassing many acres. Each exposure may or may not produce fossils. This is a characteristic of the preservation of large landscapes and what portion of that landscape is exposed to view. Not all parts of the ancient landscape had features that are necessary for animals or plants to become preserved. Exposures with fossils are known as localities. Some exposures are steep in nature like in the upper John Day river canyon, while others may be more in a horizontal position as exhibited in the plains adjacent to the Columbia River. Fossils are impacted by natural processes and human actions. Natural erosion or weathering expose fossils to the elements which makes them deteriorate rapidly and break apart. Thus, their physical structure and species type becomes unidentifiable. On steeper slopes, weathering and gravity will dislodge fossils from their geologic context. Once the context is compromised, the inherent information value of individual specimens is lost. Ground disturbing projects or illegal collection of fossils by individuals similarly destroys or removes fossils from their context with the same result. Most fossil localities in the planning area appear as steep eroded badlands best avoided by most planned projects. However,



projects implemented in close proximity to localities can have indirect consequences by providing easy access to individuals who inadvertently or purposefully collect fossils from their original context.

Fossil localities are scattered differentially throughout the John Day Basin. What type and age of fossil one finds depends on the exposed rock unit. Most fossil resources from the Tertiary Period (54 to 5 mya) within the planning area are found between Thirtymile Creek in the lower John Day River canyon and Monument on the North Fork and around Dayville along the South Fork John Day River. Many of the better known localities are associated with and surround the John Day Fossil Beds National Monument (NPS) and contribute significantly to filling in gaps in the rock sequence not exhibited within the NPS boundary.

Between the towns of Clarno and Spray are rocks from the Cretaceous Period (144-65 mya). These rocks produce a moderate amount of invertebrate fossils (primarily shellfish [mollusks]), though a few rare joint-legged creatures (arthropods) and even more rare vertebrates have been located. This same area produces some Pleistocene fossils (less than 2 mya) as well. The Prineville District office has on display a mammoth tusk removed from a creek within this area. Other Pleistocene fossils (bison) have been reported in the upper stretches of the South Fork John Day River. Pliocene fossils (5-2 mya) also have been reported from the northern portions of the John Day Basin near the Columbia River (Fremd *et al.* 1994; Orr and Orr 1999).

## Existing Condition

Through an interagency agreement between the NPS and the BLM, the NPS maintains a database of recorded fossil localities within the Prineville District that fall within their scope of collections (50-5 mya), as well as professional evaluation of significance. There are 155 such fossil localities recorded on BLM managed lands in the planning area. The majority of these localities are known to occur in rocks that produce or are highly likely to produce noteworthy examples of vertebrates, invertebrates and plant fossils. There are additional localities, some older and some younger, that are known but have not been recorded. There are no known paleontology localities within the Baker Resource Area portion of the planning unit.

## Trends

Volcanic lava flows covered and preserved much of the older sediments in the John Day Basin from erosion. The lava cap is the principal reason fossil resources and their geologic contexts are so well represented in the basin. Erosion is both friend and foe to fossil management. Erosion exposes fossils to the elements which begins a fairly rapid process of deterioration but also reveals them for study. Fossils are also subject to human impacts through illegal collecting and vandalism. Some fossil types (for example, invertebrates and petrified wood) are subject to legal recreational collecting (authorized under 43 CFR 3620 – Petrified Wood, and under 43 CFR 8365 – Common Invertebrate Fossils), though there are no identified public collecting areas within the planning unit.

## Cultural Resources

The BLM's Cultural Resource Program is responsible for managing a variety of non-renewable resources related to archaeology, history, architecture and tradition. A cultural resource or cultural property is "a definite location of human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence." The term includes archaeological, historic or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specific social and/or cultural groups" (USDI-BLM Manual 8100). Cultural resources are divided into isolates and sites. Isolates are defined as less than 10 cultural artifacts found in a discrete area. Sites are defined as 10 or more cultural artifacts with or without features in a discrete area. Site types known for this area include but are not limited to American Indian stone tool making scatters, rock shelters, remains of living structures, pictographs/petroglyphs, rock stacked features, burials, historic homesteads/living structures or their remains, roads/trails, irrigation ditches, stock raising and management features, cemeteries, ferry crossings, mining features and equipment, prohibition era stills, wagon remains, and features related to logging activities.



Once identified, cultural resource sites are evaluated and managed according to two different sets of criteria:

- Criteria of the National Register of Historic Places. Eligibility for listing on the National Register of Historic Places is assessed using criteria that addresses site integrity and considers its association with significant events, or significant persons, whether or not the property embodies the distinctive characteristics of type, period, or method of construction or represents the work of a master, or has yielded, or may be likely to yield, information important in prehistory or history. The method(s) used to arrive at these criteria must, at a minimum, meet or exceed the Secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation (NPS, 48 FR 44716, September 29, 1983).
- Criteria of the management use categories of the BLM (BLM Manual Section 8110.42). Six BLM management use categories (scientific use, conservation for future use, traditional use, public use, experimental use, and discharge from management) are employed to provide for site protection and use standards. Although some scientific and experimental uses result in the physical alteration of resources, in general, use does not imply consumptive use. Managed use of cultural resources can be fully compatible with long-term preservation, and also provides the means by which preservation is achieved.

## **Prehistoric Resources**

On a regional basis, the John Day Basin has been influenced through time by what is perceived as two distinct cultural areas—the Columbia Plateau to the north and the Great Basin to the south. Both of the larger cultural areas have their separate characteristics. The Columbia Plateau cultures are generally focused on river systems taking advantage of the elevation changes in that system to provide resource availability throughout the different seasons. Fish, berries and roots are important resources in this culture area. Resource storage and semi-permanent dwellings are key features for this area. Great Basin cultures focused on internally drained lake basins and other water features. Similarly, the Great Basin cultures take advantage of resource availability afforded in areas with relatively close elevation changes. Rabbits, waterfowl, and roots are important resources. Storage and temporary shelters are key features. Both groups developed relationships across and moved seasonally between these geographic areas as a hedge against food shortages and to increase the viability of their respective populations.

Prehistoric sites of archaeological interest are scattered throughout the planning area. They are most commonly found in certain environmental locations that are heavily influenced by the existing geology/terrain. For example, there is a high potential to find prehistoric sites near any water course or body, such as rivers, streams, springs, and lakes. Similarly, ridges and breaks (abrupt changes in topography) are likely spots to find evidence of past use or occupation. Steep slopes and rocky ground are less likely to have cultural resources of relevance, though there are exceptions.

## **Historic Resources**

The history of the John Day Basin varies from north to south. Exploration occurred early in the lower stretches of the river system, the most notable being the Lewis and Clark expedition. This group passed the mouth of the river on both their descent and ascent of the Columbia River in the early 1800s. The river derives its name from a fur trapper, John Day, a member of the Astor party of 1811-12, who lost his way in the Blue Mountains and was rescued near its mouth. The river basin was not explored again until the early 1860s when gold was discovered at Canyon City in its upper reaches. That event set in motion the settling of the interior of the state that lasted until the 1920s. The boom and bust character of mining led quickly to the realization that the John Day Basin was most suitable for farming and ranching, particularly the latter. In the lower stretches of the river, grazing started early but by the 1880s, became subordinate to dry-land farming, which continues to this day. In the upper stretches, grazing came shortly on the heels of the mining boom and was dominant until the 1930s. In the 1930s, technological changes allowed the previously inaccessible area to be opened to motorized logging. Lumbering in the upper basin became dominant over the next 50 years.

The location of historic sites is similarly influenced by the geology/terrain and availability of water. Gold mining site locations are mostly restricted to the upper basin. Placer and lode mining are the primary techniques used to extract the ore. Only lode mining occurs today. Key mining areas are near Canyon City, location of the original gold discovery, and Dixie Creek, near Prairie City. The key transportation route into this area was The Dalles-



Canyon City Wagon Road. Segments of this historic road still exist within the planning area. Level lands adjacent to rivers, streams and springs in lowland settings provided good locations for homesteads/ranches/farms and associated features. Most of these areas are on private lands today. However, mid-slope and upland settings may contain features or sites related to different parts of the ranching land use system. Most early ranching occurred in the mid- to upper reaches of the basin, except near the mouth of the John Day River. Later ranching is more evenly distributed, though the main ranch sites are mostly in private hands. The key areas in the planning area related to early ranching are in the Bridge Creek drainage and near Clarno. Logging on any major scale was relatively late (after 1930) in the planning area due to limited access in the rough topography. Lumbering sites are typically found in forested areas, though some processing sites may be located in an adjacent nonforested setting.

## Existing Condition

Archaeological resources are fragile, non-renewable resources. Many natural processes and human activities can damage the information value of archaeological remains at a site when the ground surface or subsurface is disturbed and site context becomes mixed or churned, artifacts or features are damaged, and site integrity is disrupted or destroyed. Change to site setting can also be affected by such disturbances. The degree to which these natural processes and human activities affect a site will depend on the site type, the setting, and the nature of the process/activity. Natural processes (such as intense thunder storms, catastrophic fires, or rodents) can be quite destructive to site condition and integrity. Human activity on a site can also be quite damaging. Artifact collecting, unauthorized digging, bulldozing, and concentrations of livestock or people are just a few of the actions that can have negative effects on cultural resources.

The BLM Prineville District, in conjunction with the U.S. Forest Service (Deschutes and Ochoco National Forests) has created the Oregon Heritage Information Management System (OHIMS) database to most effectively meet its responsibilities under federal laws and guidance, as well as planning objectives for cultural resources within the broad region these land management agencies administer. The basis for the database and the various site attributes it captures is a land-use systems model that has been applied in the region over the past decade or more (Schalk and Atwell 1994; Lebow *et al.* 1990; Burtchard 1998; Zancanella 1998) and forms the basis for context that allows the agencies to address site significance and management direction.

There are 439 archaeological site records currently in the OHIMS database for the John Day Basin. Because data entry into the database is ongoing, this is not the exact number of known sites in the planning area. For the most part, these cultural resources are distributed within the John Day River canyon, from the mouth to the upper reaches, and represent a wide variety of site types related to history and prehistory. Few places in the planning area outside the river canyon are included in the database. Of note are Rudio Mountain, Johnson Creek area, Sutton Mountain/Pat's Cabin area and the Muddy Creek area. The OHIMS database site record includes a condition attribute with several qualified selections. Of the 439 sites, 144 (33%) have Unknown condition that probably reflects older data where site condition was not noted. The remaining 295 sites (60%) have been assigned a condition attribute. Of these 295 sites, 46 (16%) are Excellent, 119 (40%) are Good, 39 (13%) are Fair, 79 (27%) are Poor, and 11 (4%) are Destroyed. Multiple agents have contributed to the condition of these sites (see above).

The Dalles-Canyon City road, homesteads in the Sutton Mountain area and lower John Day River segment, and the Dixie Mining District were identified as possibly suitable for nomination to the National Register (Lebow *et al.* 1990). One other area was mentioned as possibly needing evaluation for nomination to the National Register. That area involved two separate clusters of prehistoric sites within the lower John Day River segment that were proposed as Archaeological Districts. One of these districts has an historic component. Two segments of the Oregon Trail in the northern portion of the planning area have been nominated to the National Register of Historic Places. The Fourmile Canyon segment was nominated at the National level of significance in 1975. The John Day Crossing (McDonald Crossing) segment was nominated at the local level of significance in 1976. Both nominations were approved at the Oregon State Historic Preservation Office (SHPO).

The following interpretive sites have been developed by the BLM and cooperators: ramadas with interpretive signs were constructed at Fourmile Canyon and John Day River Crossing (west side, McDonald Crossing) segments of the Oregon Trail. The BLM John Day River Crossing interpretive site was placed on land owned by the Sherman County Historical Society through a Cooperative Management Agreement.



## Trends

Cultural resources are non-renewable resources that are affected constantly by natural factors and sometimes by human actions. As such, most sites tend to deteriorate over time and some are subjected to vandalism and/or pilfering.

# People in the John Day Basin

The remainder of this chapter describes how people use the many resources of the John Day Basin. The initial discussion focuses on the Social and Economic Context then the discussion addresses a series of uses and management categories that are important considerations for the decisions to be made in during the John Day Basin RMP planning process.

## Social and Economic Context

The planning area is primarily composed of three Oregon counties – Grant, Wheeler and Gilliam. Portions of several other counties also occur within the planning area: Baker, Jefferson, Umatilla, Sherman, Wasco, and Morrow. Gilliam, Grant, and Wheeler counties are contained almost entirely within the John Day Basin and draw their social and economic character from the planning area. Sherman, Wasco, Morrow, and Umatilla counties include portions of the Interstate 84 corridor and benefit from the more diverse social and economic opportunities a thoroughfare of this nature offers. Jefferson County has closer social and economic affiliations with the Central Oregon area. The following description of the John Day Basin social and economic environment will focus more on the counties entirely contained within the planning area (Gilliam, Grant, and Wheeler) that function within that geographic context. These counties reflect similar trends and values in the remaining counties that make up small portions of the planning area. Special attention will be given to smaller communities that contain characteristics unique to the area.

Certain defining features of every area influence and shape the nature of local economic and social activity. Among these is the local history, population, the presence of or proximity to large cities or regional population centers, types of longstanding industries such as agriculture and forestry, area racial and cultural characteristics, predominant land and water features, and unique area amenities.

## Inhabitants

### American Indian Social Setting

The study area was occupied and utilized at various times by both Plateau and Great Basin groups when Europeans first arrived. There have been a number of ethnographies compiled for the planning area (Stewart 1939; Blyth 1938; Ray 1939; Murdock 1938). All of these were written in the early part of the twentieth century, well after acculturation had taken place. This information will not be recited here because it has been adequately synthesized in several publications, including Lebow *et al.* (1990) and Connolly *et al.* (1993). Other relevant documentation includes Suphan (1974), Couture *et al.* (1986), Zilverberg (1983), and Hunn (1990). The following discussion highlights the seasonal rounds of the separate language and cultural groups within the planning area.

Plateau groups at the time of contact were utilizing the planning area on a seasonal basis. Winter villages were located on the Deschutes River and its tributaries or along the lower John Day River. During late spring family groups would begin to head for the higher elevations of the Blue Mountains to take advantage of ripening root crops and/or to attend annual gatherings in selected settings. Hunn (1990, p. 127), for example, notes that hundreds of people would gather in Fox Valley in late June to harvest camas. Bitterroot and lomatiums, however, occur in patchy steep shallow soils and are better harvested by small groups. The rest of the summer and into the fall, family groups would utilize primarily the uplands, gathering, hunting, fishing, processing, preparing and possibly some storing of a variety of plant and animal resources. Fishing in the uplands seems to be oriented more towards spawning lampreys, native trout, white fish, and suckers than to Spring salmon runs, although



they would have been taken as well. Of particular interest for the planning area is the gathering of nuts and berries which probably played a more important role for subsistence than normally expressed. In fact, given the apparent limited availability of anadromous fish in the upper reaches of the John Day River system, there may have been a scheduling conflict between nut/berry collecting in the uplands and the highly sought after fall salmon runs along the Columbia River. Excess stores of roots, nuts, and berries were apparently hauled back to lowland villages for winter use. This implies that substantial travel routes would have been established between regularly visited uplands and more permanent occupation sites lower in the river system.

Relative to the planning area, northern Great Basin groups wintered in two, possibly three, areas. These include Harney Valley, Canyon City/John Day area, and probably the lower stretch of Murderer's Creek along the South Fork John Day River. The gathering and scattering of small groups during particular seasons in response to resource availability is characteristic of the Northern Paiute. Supplementing dwindling winter stores was always a concern, therefore, hunting and foraging continued throughout the leaner months. The coming of spring, however, caused small groups to range out in search of the first roots and greens. Fox Valley, Bear Valley and Stinkingwater Mountains were favored root gathering areas where many groups gathered to share in the harvest and participate in other social activities. Great Basin groups appear to have been more mobile in their seasonal round after the spring festival. The search for food ranged from the Blue Mountain uplands to the lowland settings to the south and back again. These activities were typically performed by small family groups and included a wider range of resources than recorded for Plateau groups. Roots, like in the Plateau, were a primary food source, though grass and wada seeds, rodents, rabbits, crickets, and some salmon were also important. The collection of particular plant or animal species, such as wada seeds and rabbits, were occasions for more festivals.

In the fall, groups would head to the uplands again to collect pine nuts and berries, and to hunt deer and elk. Meat and plant resources were dried during this time for winter use. After the fall harvest, groups headed back to wintering locations.

The ethnographies for this region note that there was much animosity between these competing groups, though this may simply reflect the stress both groups were experiencing due to demographic dynamics caused by disease, the effects of the horse, western technology, and Euroamerican expansion generally (Hanes 1995). A more representative view might be one in which relations were generally amicable with only minor conflicts occurring as isolated incidents.

## Europeans

Historically, the John Day Basin was peripheral to the early exploration of the area. From 1800 to 1843, explorers from Lewis and Clark to John C. Fremont skirted or passed through the John Day country. In fact, the John Day River was named for an early trapper with the Astor party of 1811-12. The fur trade promoted most of the early exploration and included Peter S. Ogden of the Hudson Bay Company (1828-1829), John Work of the same company in 1830-31, and Captain Bonneville, U.S. Army (1832-33). The explorations of John C. Fremont in 1843 brought to a close the period of exploration. Fremont passed along what would very shortly become the Oregon Trail, the major route to westward expansion.

For nearly 20 years emigrants from the east filed through the planning area along the Oregon Trail on their way to the lush Willamette Valley. Few stayed on the east side of the Cascade Range. In 1855, a fort was established at The Dalles. That same year, treaties were signed between the U.S. government and the regional tribes which established the Warm Springs and Umatilla Indian Reservations. Both these tribes ceded lands to the U.S. Government but retained certain rights to continue traditional practices, such as gathering, hunting and fishing. Periodic conflicts between Native populations and Euroamerican settlers would continue until the end of the Bannock Wars in 1878. These conflicts effectively kept many settlers out of the interior. The Dalles became the early regional military and supply center for central Oregon. The military was there to protect travelers along the Oregon Trail. They also promoted exploration of travel routes through the interior to establish links to other regional forts. When gold was discovered at Canyon City in 1862 the military took on the added responsibility of protecting miners on their way to the isolated mines from Indians as well as robbers and highwaymen. One of the routes the military explored became The Dalles-Canyon City road. This road became the major route to the Oregon interior and contributed importantly to its settlement. Shortly after the rush the gold played out. Many miners moved on to the next "El Dorado" but some turned to stock raising and farming in the lush valley



floor and the grassy hills of the upper John Day country. In the 1860s the route of the Oregon Trail became The Dalles-Walla Walla Road, ferrying goods and supplies east and west along the Columbia River, crossing the John Day River at what is now McDonald Crossing.

Ranching was the economic foundation of the early emigrants in the John Day Basin. Cattle, sheep, horses and hogs were all raised within the basin depending on market demand. In the southern Columbia Plateau portion of the planning unit ranching was supplanted by dry-land farming after 1878 and agriculture has been dominant ever since. In the Blue Mountains, ranching was an obvious land use that became the lifeblood of commerce for the next 50 years. Initially, only a few hardy souls were willing to settle in the Blue Mountains at great personal risk to attacks by Indians in the 1860s. Early homestead/ranches occurred in the Bridge Creek Basin (1863), the Clarno-Pine Creek Basin (1866) and Kahler Basin (1869). Ranching continued through the 1870s in the Blue Mountains with high stocking levels and open range grazing. By the end of the 1870s the threat of Indian attacks had disappeared and settlement of the area accelerated. Throughout the 1880s and 1890s the open range grazing of central Oregon began to experience stress. Increases in people attempting to ranch, costs of fencing the range and poor markets contributed to the decline in large cattle ranches. Some of the ranches turned to raising sheep because of better market conditions. All of the ranches began to experience shortages due to the increased pressure on the forage. The competition for forage created by this situation led to the infamous cattle versus sheep "range wars" of the late 19th and early 20th centuries. Thousands of sheep—and a few herders—were slaughtered by cattlemen determined to rid the area of the dreaded sheep. In part to settle the conflict, the U.S. Government began to establish the Forest Reserve system or Forest Service to regulate the access and amount of grazing that would occur in the forested regions.

The land use of lumbering had its initial beginnings in the 1860s at Canyon City. The impact was local because the demand was local. The terrain of the John Day created an effective barrier to the technology of the 19th century. The timber industry of the John Day country didn't really begin until the 1930s when the technology improved enough to open up vehicle access to the interior. There was a minor bit of railroad logging near Prairie City that crept into the district from Sumpter to the north and Hines from the south. Truck logging was the main mode of transporting logs to mills in the John Day Basin. Broad-scale road construction and tractor logging continued on public and private lands up to the 1980s. These uses continue today, but to less extent (Lebow *et al.* 1990; Beckham and Lentz 2000).

Grant County was established in 1864 from portions of Wasco and Umatilla Counties, making it the largest county in the state at that time. Subsequent boundary revisions through land transfers to Lake County (1874) and the creation of Harney (1889) and Wheeler (1899) Counties have shrunk Grant County to its present day configuration. The discovery of gold in the area in 1862 served as the impetus for population growth and also created the original economic foundation. Within days of the discovery approximately a thousand miners were camped along the banks of Canyon Creek near present day Canyon City. Gold and placer mining has since declined in economic importance, but a diminishing number of tenacious prospectors and miners can still be found carrying on the legacy that first drew settlers to this area. As mining declined, farming and ranching grew in economic importance. In addition Grant County, which includes parts of four national forests, became largely dependent on forest product industries. As forest activities have waned in the last several decades, Grant County still provides a home and limited resources to several lumber mills. Most recently recreational tourism has provided some economic benefit to the county. Hunting provides a flood of visitors to the area in late summer and fall as thousands of enthusiasts migrate to the area for several days to weeks at a time. The local towns provide limited services to these visitors through the end of hunting season, till the higher level of activity is replaced with the familiar calm of day-to-day living (Oregon State Archives 2006).

Wheeler County was and still is mostly a ranching community with families close enough together to form small towns. After the discovery of gold in Grant County, The Dalles-Canyon City Military Road was established to connect the prospering gold fields with the government in The Dalles. To reduce Indian attacks to travelers this road utilized the existing mail route through Mitchell. As a result by 1884 Mitchell was a flourishing area – even sporting a hotel. The northern portions of the county witnessed the creation and demise of several logging based communities between the 1930s and 1970s (Oregon State Archives 2006). The county is internationally known for an extensive depository of fossils from the Cenozoic Era (USDI National Park Service, John Day Fossil Beds 2006).



Native Americans first inhabited the Gilliam County area and used trails across the grasslands to reach fishing, hunting, foraging, and trading areas. The first nonnative people in the area were immigrants following the Oregon Trail to the Willamette Valley. Raising stock dominated the early settlement economy until 1878 with the advent of dry-land farming. This transition lent itself to the areas long standing and dominant agricultural tradition in wheat and barley. The Northern Pacific Railroad along the Columbia was constructed in 1883 which was followed by a line from Arlington to Condon in 1905 (Toepel *et al.* 1979, p. 139). The advent of this transport system irrevocably changed the nature of good and service exchange, enabling development of the areas agricultural economy. While ranching preceded farming it still plays a role in the local economy and residents find connection to the land through this tradition. Today recreation, wind generation, apples and other irrigated crops are becoming increasingly important (Oregon State Archives 2006).

## Cultural Identity

“People want enough growth to keep the school and the town going, but not enough to change the lifestyle.” [North Fork Community Resource Unit]

Cultural identity within the John Day Basin varies, as shown in a recent report from community field work commissioned by the BLM. The report suggests residents in Grant County relate in terms of cultural identity to Baker City and La Grande than to Bend for regional affiliation. In essence Grant County residents consider themselves part of “Eastern” Oregon. Residents in Wheeler County relate more to Prineville and Bend than to the Columbia River area or Baker County area. Wheeler County residents consider themselves part of “Central” Oregon, or “High Desert.” Gilliam and Morrow County residents are part of the Columbia Plateau and generally relate to Pendleton, Hermiston, and Tri-Cities for regional affiliation (Preister *et al.* 2006).

As new residents move in, ranches are bought up and public land experiences increased use by recreationists. Many of these new residents and tourists are attracted by natural amenities and the western cultural appeal of the area which has been recently designated as Oregon’s Rugged Country (State of Oregon 2007). Traditional ways of life rooted in timber and range remain culturally important in the area. BLM plays a role by providing valuable resources to these traditional timber and ranching communities but must increasingly also provide for more recreation demand.

## Demographic Overview

“There were 20 kids around here years ago. Now there are 2—mine.” [Monument]

According to the U.S. Census Bureau, Gilliam County’s population increased by 4.5 percent between 1990 and 2005. Grant County’s population decreased by 7 percent between 1990 and 2005 with a slight increase between 1990 and 2000. Between 1990 and 2005 Wheeler County experienced an overall 4 percent increase in population with a slight decrease in population between 2000 and 2005 to 1,455. In terms of population, Wheeler County has the fewest people of any county in Oregon and it still has less than half the population it had at its peak in the 1950s (Oregon State Archives 2006) (see Table 3-14). Sherman County has the second smallest population followed by Gilliam County. Wheeler County has the state’s second smallest population density, Gilliam is fourth, Grant fifth, and Sherman is sixth (U.S. Census Bureau 2005) (see Table 3-14).

Commuting data for both Grant and Wheeler counties suggest they are bedroom communities since income derived from people commuting out of the county to work exceeds the income from people commuting into the counties (USDC Bureau of Economic Analysis 2006). Gilliam County can be described as an employment hub since income derived from people commuting into the county to work exceeds the income from people commuting out of the county. The degree of commuting varies; in 2006 11.5 percent of total income was earned at places of employment outside of Wheeler County while only 1.0 and 11.3 percent for Grant and Gilliam counties, respectively. These shares have changed since 1981 from 3.7, 1.2, and 3.9, respectively suggesting this trend has increased for Wheeler and Gilliam counties but is steady in Grant County.



**Table 3-14. Population Change in Counties and Towns within the Planning Area.**

	1990	2000	2005	Change
<b>OREGON</b>	<b>2,860,375</b>	<b>3,431,070</b>	<b>3,641,056</b>	<b>27.3%</b>
<b>Gilliam</b>	<b>1,717</b>	<b>1,915</b>	<b>1,794</b>	<b>4.5%</b>
Arlington	425	524	490	15.3%
Condon	635	759	708	11.5%
<b>Grant</b>	<b>7,853</b>	<b>7,935</b>	<b>7,297</b>	<b>-7.1%</b>
Canyon City	648	669	597	-7.9%
Dayville	144	138	122	-15.3%
John Day	1,836	1,821	1,605	-12.6%
Long Creek	249	228	202	-18.9%
Monument	162	151	134	-17.3%
Mt Vernon	538	595	531	-1.3%
Prairie City	1,117	1,080	965	-13.6%
Seneca	191	223	199	4.2%
<b>Sherman</b>	<b>1,918</b>	<b>1,934</b>	<b>1,749</b>	<b>-8.8%</b>
Grass Valley	160	171	153	-4.4%
Rufus	295	268	235	-20.3%
Wasco City	374	381	341	-8.8%
<b>Wheeler</b>	<b>1,396</b>	<b>1,547</b>	<b>1,455</b>	<b>4.2%</b>
Fossil	399	469	435	9.0%
Mitchell	163	170	158	-3.1%
Spray	149	140	130	-12.8%

Source: U.S. Census Bureau, Population Finder

The population in all three counties has aged since 1990. Wheeler County is comparatively older with an average age of 48.1 years—up from 44.1 years in 1990. Between 1990 and 2000, the largest and fastest growing age group was between 55 and 59 years old. During the same 10-year period, the age group between 20 and 44 years old showed a marked decrease. This indicates the population is getting older and the younger generation is moving away. Grant County also displays an aging population. While the average age is lower than Wheeler County (41.7 years old in 2000), this is up from 36.3 years old in 1990. The largest and fastest growing age category is from 45 to 49 years of age – while the population has grown from 1990 to 2000 the age group from 20 to 39 years old has also decreased (Economic Profile System 2009). Gilliam County shows similar trends as Grant—the median age of 42.8 in the year 2000 is up from 37.4 in 1990, the fastest growing age category is also 45 to 49 years of age, and the age group from 25 to 34 years old has decreased. All three counties demonstrate similar trends: an aging population occurring alongside an out-migration of the younger generation.

In 2000 Gilliam, Grant, and Wheeler counties were respectively 96.8, 95.7, and 93.3 percent white (Economic Profile System 2009). Grant County has had a colorful history associated with Chinese immigrants who came to work in the gold fields of Eastern Oregon. In 1879 these immigrants made up a substantial portion of Grant County's population numbering 2,468 compared to 960 whites; however in 2000 people of Asian descent made up less than 1 percent of the three county populations. People of Hispanic descent have increased in number and percent of total population in Gilliam, Grant, and Wheeler counties between 1990 and 2000 (Table 3-15). The Hispanic population in Morrow County increased by 2,489 between 1990 and 2000, meaning that 74 percent of its population increase was comprised of Hispanic people (Preister *et al.* 2006). In the year 2000, Native Americans comprised 1.6 percent and 0.8 percent of Grant and Wheeler counties respectively (Economic Profile System 2009).



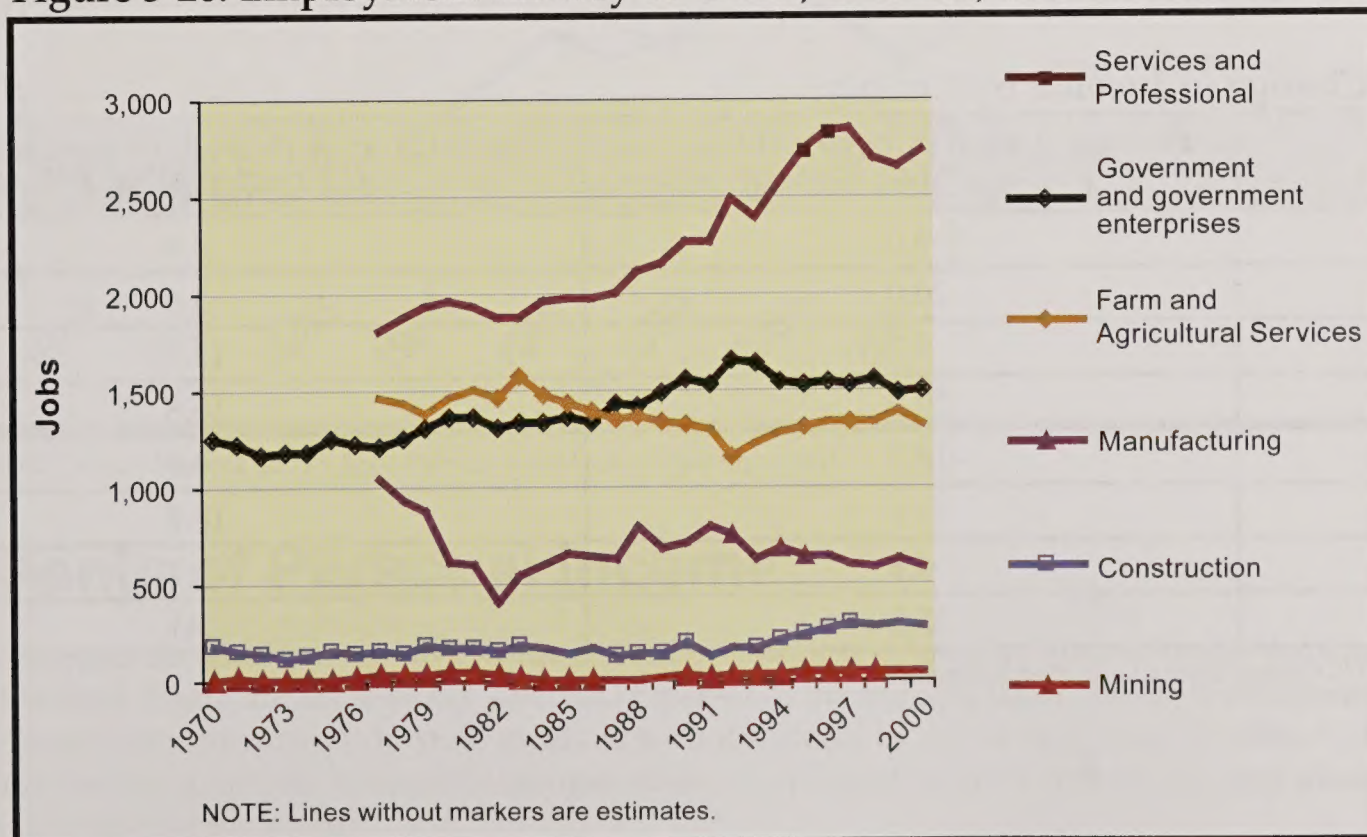
**Table 3-15. Number and Percent of Persons of Hispanic Origin.**

	1990		2000	
	Number	Percent	Number	Percent
Grant	41	0.5	163	2.1
Wheeler	6	0.4	79	5.1
Sherman	10	0.5	94	4.9
Gilliam	7	0.4	35	1.8
Morrow	197	2.6	2,686	24.4

## Isolation, Economic Specialization, and Employment

The Interior Columbia Basin Ecosystem Management Project (ICBEMP) also assessed the social and economic conditions of communities within the planning area. They grouped the counties east of the lower John Day River into the Pendleton economic subregion (Gilliam, Wheeler, Grant, Morrow and Umatilla), and the counties west of the lower John Day River (Sherman, Wasco, and Jefferson) into the Redmond/Bend economic subregion. Within these subregions ICBEMP identified communities that were relatively isolated (more than 35 to 50 miles from a major commercial and population center). This analysis determined that all the communities in the planning area were isolated, or constituted an isolated trade center. Isolated communities with no nearby population centers are more likely to depend on a few major industries (USDA Forest Service 1998).

Economic specialization was also addressed by ICBEMP. A community was designated specialized if employment in that sector was at least as great as ten percent of total employment for that community. Analysis revealed that Lonerock, Mitchell, Spray, and Monument were specialized with respect to the agricultural sector. Mitchell, Long Creek, Mount Vernon, John Day and Prairie City were specialized with respect to the wood products sector. There were no communities in the planning area specialized with regard to mining or service sectors. Dayville, John Day and Prairie City were all specialized with respect to Federal Government employment. Lastly, Condon was identified as a community specialized in the transportation sector (USDA Forest Service 1998). The degree of economic specialization is reflected in Figure 3-26, where total employment in Grant and Wheeler counties is disaggregated into six industry sectors.

**Figure 3-26. Employment History of Grant, Wheeler, and Gilliam Counties.**



From 1970 to 2006, total employment in Gilliam, Grant and Wheeler counties increased by 19 percent. This increase is dwarfed by the state increase in total employment of 132 percent. The employment growth seen in these counties is largely due to increases between 1977 and 2000 in service and government sector employment; 52 percent and 24 percent respectively. These increases largely offset decreases in manufacturing (including forest products) and farm related employment which decreased by 45 and 10 percent respectively over the 1977 to 2000 period (Economic Profile System 2009).

The private sectors examined can be lumped into Goods-Producing sectors (Natural Resources and Mining, Construction, and Manufacturing) and Service-Providing sectors (Trade, Transportation, Utilities, Finance, Education, Health, etc.). Goods-Producing sectors accounted for 20 percent of total employment and on average paid \$30,769 per year, while Service-Providing sectors accounted for 43 percent of total employment and paid \$24,114 on average in 2006 (Economic Profile System 2009). From these statistics it is apparent that while the service sector has offset decreases in manufacturing these jobs do not pay as much. The welfare implications of these changes are not so clear. The large degree of out-migration noted above suggests people may be moving out instead of taking lower paying jobs in the service sector.

## Economic Well-Being and Poverty

Based on changes in personal income between 1996 and 2005, economic well being appears to have improved in the majority of the planning area except in those counties along the lower John Day River. The percent change in county median income between 1989 and 1999 supports this notion of overall improvements in economic well being except in Grant County where a slight decrease occurred (see Table 3-16).

From 1990 to 2008, unemployment in Grant and Wheeler counties has consistently remained above the national unemployment rate. Grant and Wheeler Counties have experienced average rates of unemployment of 10.4 percent and 8.7 percent, respectively. While these two counties are well above the national average of 5.5 percent, Gilliam County has maintained an average rate of unemployment of 4.9 percent, well below the national average (Economic Profile System 2009) (see Figure 3-27).

Grant and Wheeler County residents living below the poverty level remains close to recent levels (see Figure 3-28). Between 1989 and 2004, Wheeler County's average percent below poverty has been the same as the state average of approximately 11.9 percent while Gilliam's population below poverty has remained below the state's average at a level of 8.8 percent (USDC Census Bureau, Small Area Income and Poverty Estimates 2007).

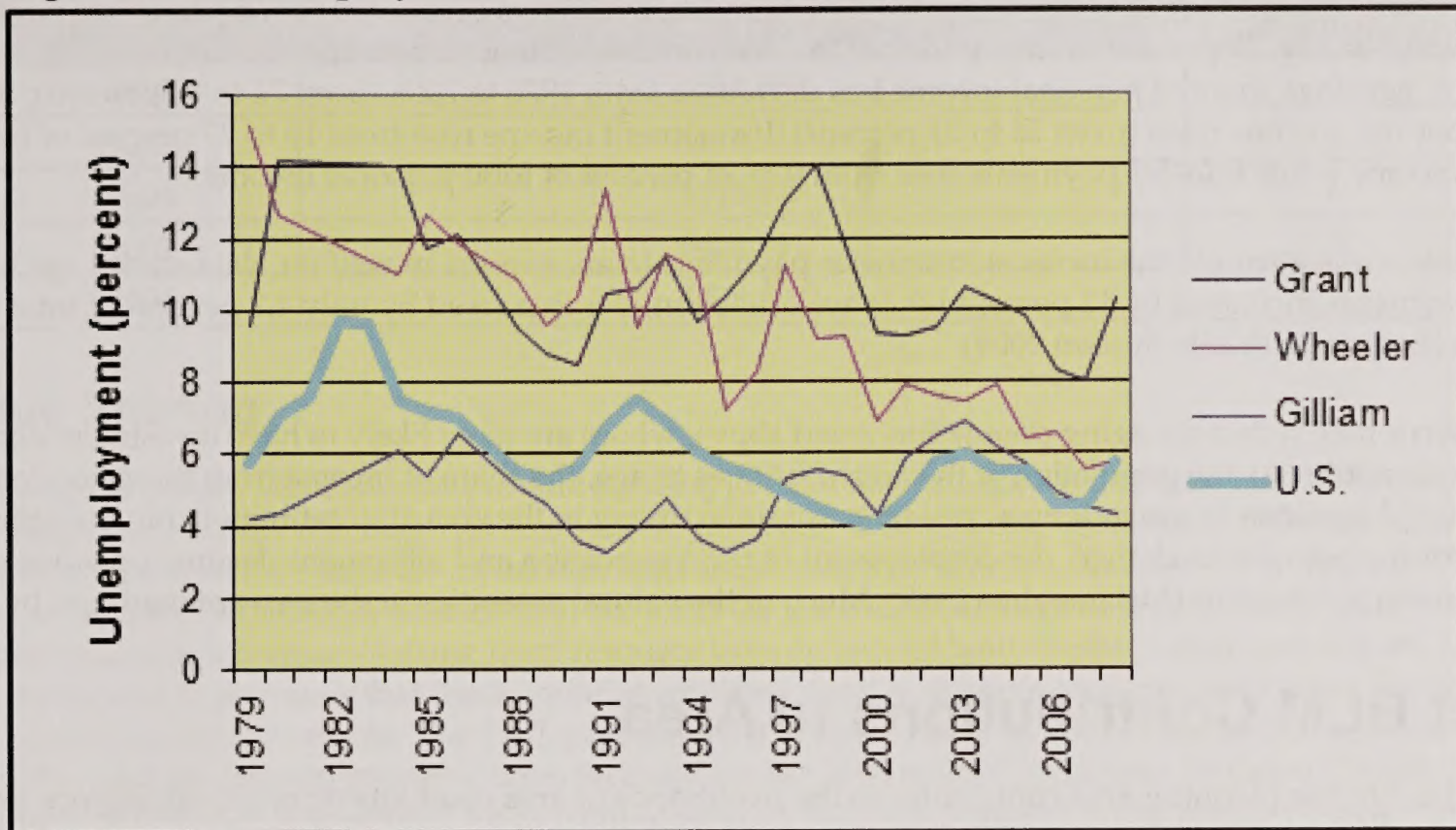
**Table 3-16. Change in Income by County.**

County	Percent change in personal income between 1996 and 2005	Percent change in median household income between 1989 and 1999
Gilliam	-9.0	4.4
Grant	20.0	-1.4
Jefferson	9.5	13.7
Morrow	20.9	16.8
Sherman	-18.5	4.8
Umatilla	12.4	18.7
Wasco	4.8	7.7
Wheeler	37.2	41

Source: BEA and US Census Bureau adjusted for inflation

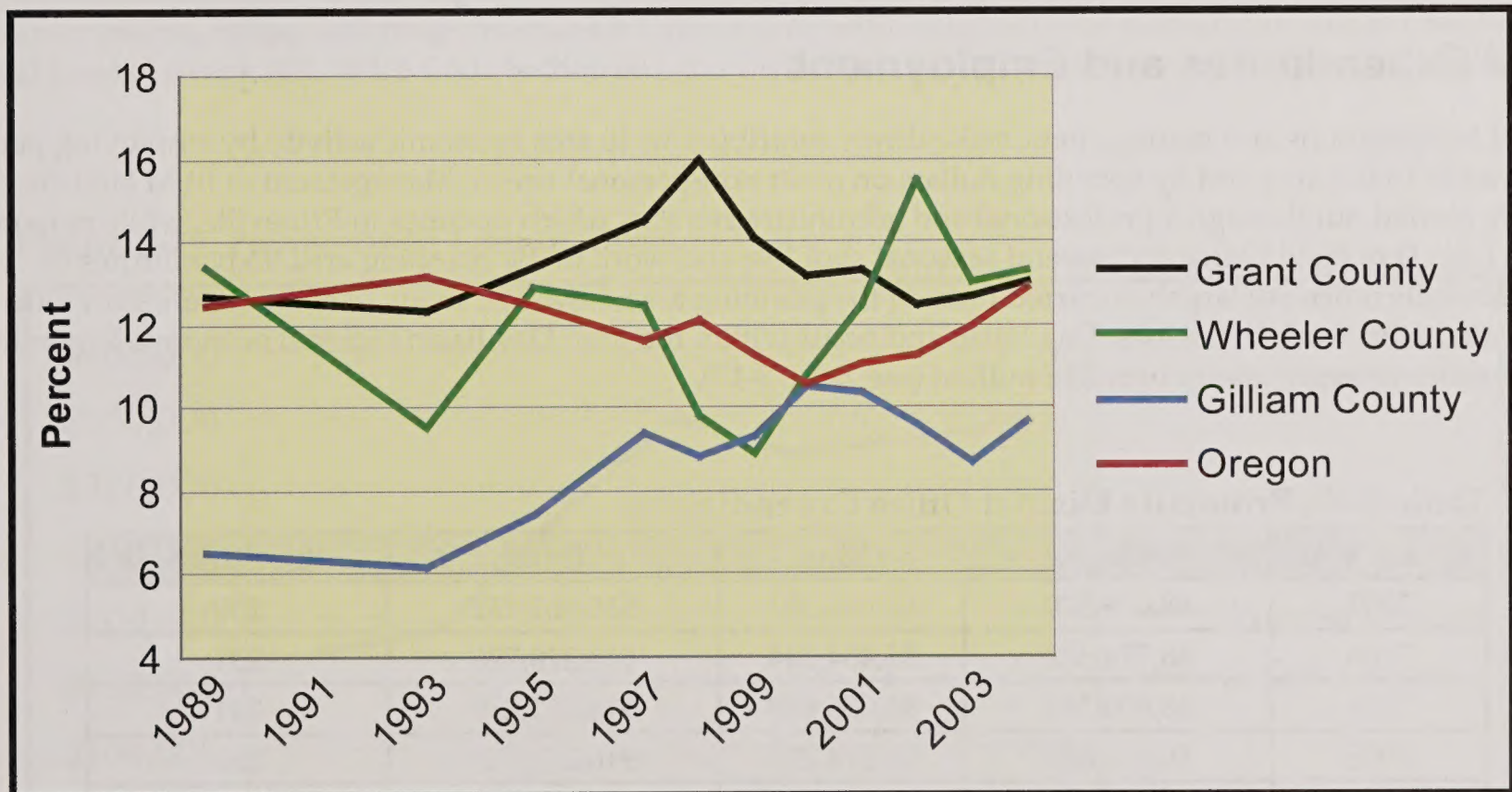


Figure 3-27. Unemployment Rate of John Day Basin Counties.



Source: USDC Census Bureau, Small Area Income and Poverty Estimates 2007.

Figure 3-28. Percent of Population below Poverty Level.



Source: USDC Census Bureau, Small Area Income and Poverty Estimates 2007.

## Components of Personal Income

Further examining trends within personal income provides insight on characteristics of consumers and their connection to the area. There are three major sources of personal income: (1) labor earnings or income from the workplace; (2) investment income, or income received by individuals in the form of rent, dividends, or interest earnings; and (3) transfer payment income or income received as Social Security, retirement and disability income, or Medicare and Medicaid payments.



In Gilliam, Grant, and Wheeler counties, labor earnings accounted for 49 percent of all income in 2006. This is relatively low in comparison to Oregon as a whole where labor earnings accounted for 65 percent of personal income. Additionally, 27 percent of total personal income was investment income in the three counties in 2006. While labor earnings share of personal income has decreased from 1970 to 2006 (from 74 to 49 percent), the share of non-labor income has risen (from 26 to 51 percent). Investment income rose from 16 to 27 percent of total personal income while transfer payments rose from 9 to 24 percent of total personal income.

While many might attribute the increase in transfer payments to an increase in welfare, data shows age related transfer payments increased by 11 percent while welfare payments increased by only 1.3 percent of total transfer payments (Economic Profile System 2009).

These patterns may reflect the aging population noted above, whom are more likely to have investment earnings than younger adults. As the population of the area continues to age, the share of income from these non-labor sources should continue to rise as long as residents continue to stay in the area after retirement or new retirees move in. Rural county population change, the development of rural recreation and retirement-destination areas are all related to natural amenities (McGranahan 1999). Much of the natural amenities in the area are managed by the BLM.

## Direct BLM Contributions to Area

The BLM land in the planning area contributes to the livelihoods of area residents through subsistence uses as well as through market-based economic production and income generation. Public lands provide products of value to households at no or low cost (permit fees). These products include fuel wood, boughs, Christmas trees, wood posts, livestock, and materials such as sand and gravel. Additional products with subsistence value may include fish, game, plants, berries, and seeds. In addition, use of these products is often part of traditions and sustains local culture.

## BLM Expenditures and Employment

The BLM operations and management make direct contributions to area economic activity by employing people who reside in the area and by spending dollars on other non-personal needs. Management of BLM lands is largely carried out through a professional and administrative staff which operates in Prineville, while personnel at the John Day Field Office and several seasonal staff live and work in the planning area. Expenditures by the Prineville office are largely incurred outside the planning area; however, many of these expenditures are associated with work in the John Day Basin and occur within the John Day Basin regional economy. Expenditures at this office recently rose to over \$16 million (see Table 3-17).

**Table 3-17. Prineville District Office Expenditures.**

Fiscal Year	Personnel	Other	Total	Positions
2002	\$8,059,570	\$7,004,362	\$15,063,932	230
2003	\$8,774,382	\$5,454,344	\$14,228,726	231
2004	\$8,956,181	\$5,056,678	\$14,012,859	241
2005	\$9,396,868	\$6,874,275	\$16,271,143	263
2006	\$9,773,623	\$6,608,260	\$16,381,883	228

The John Day Field Office is located in the town of John Day, providing a direct contribution to the John Day Basin RMP area. Staffing levels and payroll of these BLM employees were stable over the period from 2002 to 2006. In 2006, the BLM share of total payroll from all federal government employees (Oregon Employment Department 2006) in Grant and Wheeler counties represented 3.6 percent (see Table 3-18: Salary Expenditures). Recently, BLM staffing levels have been reduced within the John Day Basin and that trend is expected to continue. In addition to these full time positions, several seasonal staff work and live within the basin. Contracts for facilities maintenance, shuttling vehicles and projects contribute directly to the area economy and social stability as well.



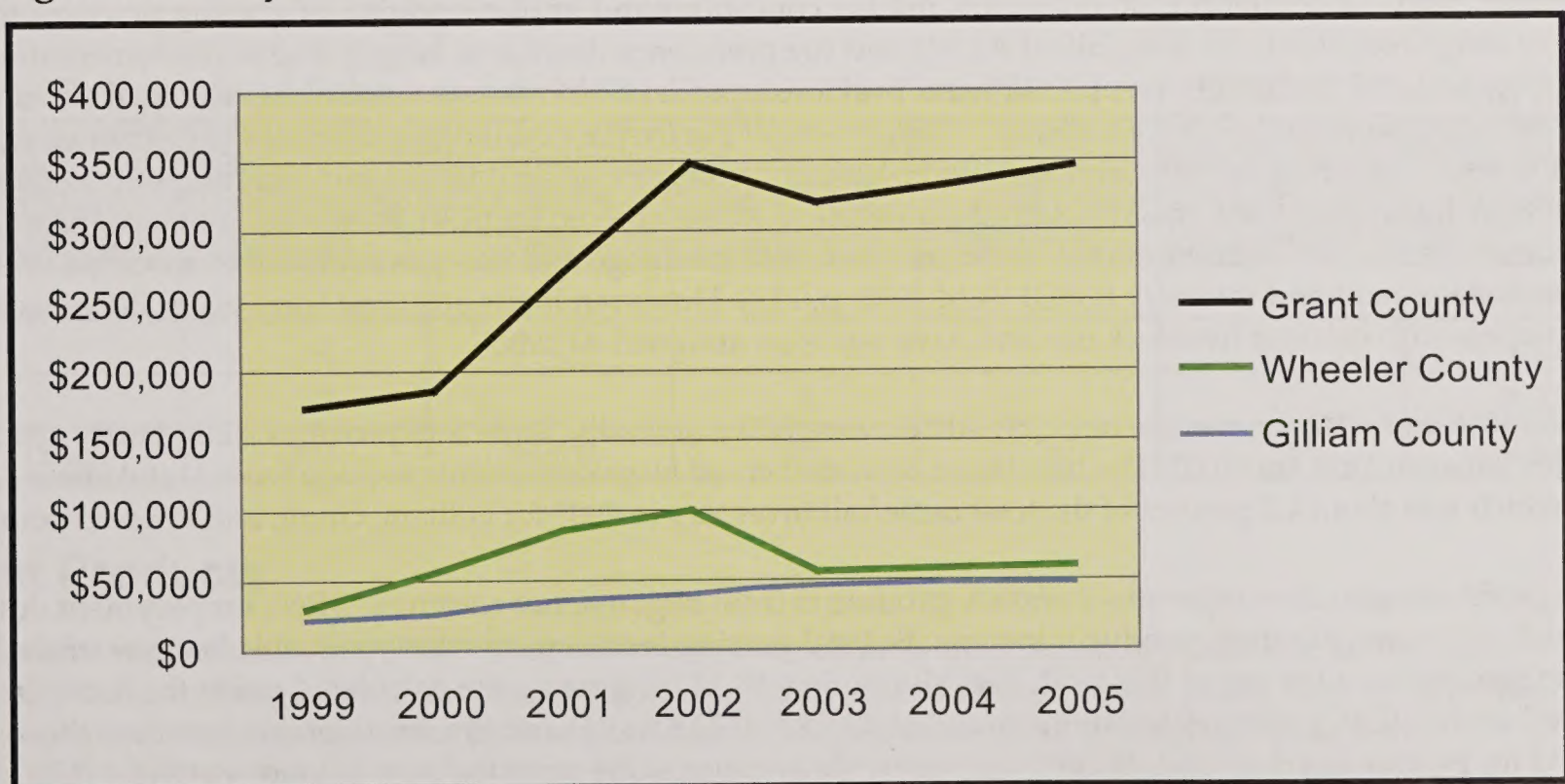
**Table 3-18. Salary Expenditures for BLM Personnel Within the Basin.**

Fiscal Year	Expenditures for Personnel	Positions
2002	\$314,359	6
2003	\$310,517	6
2004	\$310,679	6
2005	\$434,391	7
2006	\$478,467	7

## Revenue Sharing

In 1976, Congress passed legislation to provide funding to counties through Payments in Lieu of Taxes (PILT) in order to compensate for tax revenues not received from Federal lands. These taxes would typically fund various services that are provided by counties (road maintenance, emergency services, and law enforcement). The PILT payments are determined using a formula that accounts for the county acreage of federal land, county population and the previous year's revenue sharing from resource uses on federal land (timber, range, mining, etc.). These PILT payments add to revenues that these counties routinely receive through local property taxes. Figure 3-29 displays previous year's payments. The PILT payments to Gilliam County in 2007 totaled \$48,275, which was 1.4 percent of the total ad valorem property taxes received for the 2006 to 2007 fiscal year. In Grant County the 2007 PILT payment of \$351,438 represented 5.8 percent of local ad valorem property taxes, and in Wheeler the 2007 PILT payment of \$60,562 was 3.5 percent of local ad valorem property taxes (Oregon Department of Revenue 2007). In November of 2008 additional payments were authorized by the Emergency Economic Stabilization Act of 2008 (Public Law 110-343). The law authorized counties to receive their full entitlement level payment from 2008 through 2012.

In addition mining, timber and range revenues are also shared with counties in the planning area under the 1920 Mineral Lands Leasing Act, 30 US Code Section 603, the Taylor Grazing Act and numerous Oregon state ordinances.

**Figure 3-29. Payments in Lieu of Taxes.**

Source: USDI PILT database



## Industries in the Area Affected by BLM Management

### Livestock Production

Within the planning area agriculture plays an important economic and social role; area residents identify with the tradition, land-use and history. Of Oregon's 36 counties, Grant is the 12th largest cattle producer. The most recent Census of Agriculture (2007) reports Grant, Wheeler, and Gilliam counties had 726 farms and ranches (398 in Grant, 164 in Wheeler, and 164 in Gilliam) and of these 56 percent (403 operators—257 in Grant, 88 in Wheeler, and 58 in Gilliam) were engaged in cattle production with total cattle numbering 66,641 (39,542 in Grant, 16,711 in Wheeler, and 10,388 in Gilliam) in 2007. In 2006, grazing on BLM lands in the planning area involved 132 operators managing grazing on 231 separate allotments. The season of use on BLM allotments varies from year round, early spring grazing on the river, to complex rotation grazing systems.

Livestock are the largest source of cash receipts by agricultural producers in Grant County. In 2007, farms and ranches produced and sold products and commodities worth \$18.32 million in Grant County and \$37 million in Gilliam County, with receipts from livestock accounting for 87 and 17 percent of these county totals, respectively. In 2007 information was not disclosed by the Census of Agriculture for Wheeler County in order to protect proprietary information; however, in 2002 \$17.37 million were sold in Wheeler County and receipts from livestock accounted for 30 percent of total commodity sales. Hence the livestock industry is a larger portion of the agricultural industry in Grant County than in Gilliam or Wheeler counties. Sheep are also produced in the area and number 855 head and 39 operators in Grant and Wheeler counties; 688 sheep and 29 operators in Grant County (85 and 59 percent, respectively) and 167 sheep and 10 operators in Wheeler County (15 and 41 percent, respectively) while information was not disclosed by the Census of Agriculture for Gilliam County (Census of Agriculture 2007). The nature of the local livestock industry can be characterized by production for sale of calves and feeder steers, along with beef cows or breeding stock. Turnover of ranches in the area has been intensified by a tendency of the younger generation to look to more stable forms of income, often breaking longstanding family ranching traditions. In addition, with rising operating costs smaller operators are finding it more difficult to remain in the industry.

The AUMs are billed by BLM on an annual basis. The established preference limit for AUMs in the planning area is currently 25,222. This is the maximum number of AUMs that could be offered under ideal forage conditions. However, actual use of AUMs has ranged between 12,370 and 24,532 in the last ten years due to factors such as drought, financial limitations on operators, market conditions and implementation of grazing practices to improve range conditions. In 2001, billed AUMs and the preference decreased largely due to implementation of the Oregon Land Exchange Act of 2000. Land previously under BLM management was exchanged for land along the North Fork of the John Day River. While many of the exchanged lands had existing allotments, range allocations were not made on the land acquired pending further assessment under this planning effort (6,320 AUMs were lost due to the Act). Although the amount of AUMs offered by BLM decreased, many of these lands were transferred to the adjacent landowner or lessee where the rangeland use was expected to continue under similar management and intensity (USDI BLM 1998, p. 112). However, lands acquired were generally adjacent to BLM parcels with existing livestock use and have not been assigned AUMs.

Between 1998 and 2007, an average of 17,259 AUMs were billed annually. Table 3-19 provides AUM yearly actual use numbers between 1998 and 2007. The number of cows that could be grazed on this average would total about 2,877 head, which was about 4.3 percent of the total cattle/calf inventory in 2007 for Gilliam, Grant, and Wheeler counties.

A thin profit margin often separates livestock producers from negative net earnings. Often, employment outside the ranch augments livestock producer income. Federal grazing land is particularly valuable because of the low grazing fees charged for use of this land. Fees charged by BLM for grazing are calculated using the formula required under BLM grazing regulations found at 43 CFR 4130.81(a)(1) and are considerable less than those charged for private grazing land. In 2007 the statewide average AUM price for private land was \$14.1 (USDA National Agricultural Statistical Service 2007) while the Oregon Department of State Lands charged \$5.80 per AUM in 2007. The BLM formula yielded a fee of \$1.35 per AUM in 2007, which is down from \$1.56 in 2006. This federal land is the least expensive grazing land available; hence use and access is highly coveted by area cattle producers even though additional costs are usually incurred to use these lands.



**Table 3-19. Annual AUM Authorizations in the Planning Area.**

Year	Preference	Billed	(percent of preference)
1998	35,908	23,837	76%
1999	35,908	24,532	78%
2000	35,908	24,416	77%
2001	29,558	16,240	64%
2002	29,558	15,116	60%
2003	29,558	13,392	53%
2004	29,558	14,587	58%
2005	29,558	14,105	56%
2006	29,558	13,992	55%
2007	29,558	12,370	49%

Source: BLM Rangeland Accounting System

## Agriculture

Although the agricultural economy of Grant and Wheeler counties is currently dominated by livestock, Gilliam County depends on farming to a greater degree. The 2002 census of agriculture indicated that 70 percent of total product and commodity sales from farms and ranches in Gilliam County was from crops. Table 3-20 outlines the number of farms and acres of those crops for those counties in the planning area. Although Gilliam County dominates in growing wheat, oats, and barley crops, Grant and Wheeler counties grow a larger share of forage crops.

In 1997, there were 265,600 acres of crop land in Gilliam, Grant, and Wheeler counties available on public and private land (USDA Natural Resources Conservation Service 1997). The BLM specialists estimate that a total of 250 acres of agricultural land within the planning area are currently utilized; this amounts to approximately 0.1 percent of this total acreage of available crop land. The BLM agricultural lands are predominantly located in Wheeler County (approximately 200 acres) and make up 1.5 percent of the county's available crop land. Approximately 50 acres of this utilized agricultural land is unauthorized and can be classified as agricultural trespass.

**Table 3-20. Number of Farms and Acres of Crops in the Counties of the JDBRMP Planning Area.**

Crop	Grant		Wheeler		Gilliam	
	Number of Farms	Acres of Crops	Number of Farms	Acres of Crops	Number of Farms	Acres of Crops
Wheat	1		2		57	100,433
Oats	2		2		5	4,202
Barley	2		1		12	5,029
Forage crops	203	35,903	65	12,260	24	3,838

## Forest Products

In 2006, there were three lumber mills in the planning area, all in Grant County, of which one facility also produced biomass (Ehinger and Associates 2006). A log home manufacturer, also in Grant County, depends entirely on wood from the local area. In Wheeler County no mills were present; however, a log home manufacturing facility and another log furniture manufacturer existed in 2003 (Brandt *et al.* 2006, p. 25).

Patterns of timber market integration suggest the timber harvested in the area stays in the area. Nearly 100 percent of the timber harvested in Grant County was processed in Grant County. Due to the limited amount of timber processed in Wheeler County, only 1 percent of the timber harvest was processed there. However data indicate that over 90 percent of timber received in the area came from that area (Brandt *et al.* 2006, p. 19).



Forestry, logging and wood products manufacturing accounted for 13 percent of employment in Grant County in 2006. Wheeler County forestry and logging employment data were not disclosed in 2006 while wood products manufacturing employment was zero<sup>1</sup> (Oregon Labor Market Information System 2007). This suggests Wheeler County is currently less dependent on the forest products industry than Grant County.

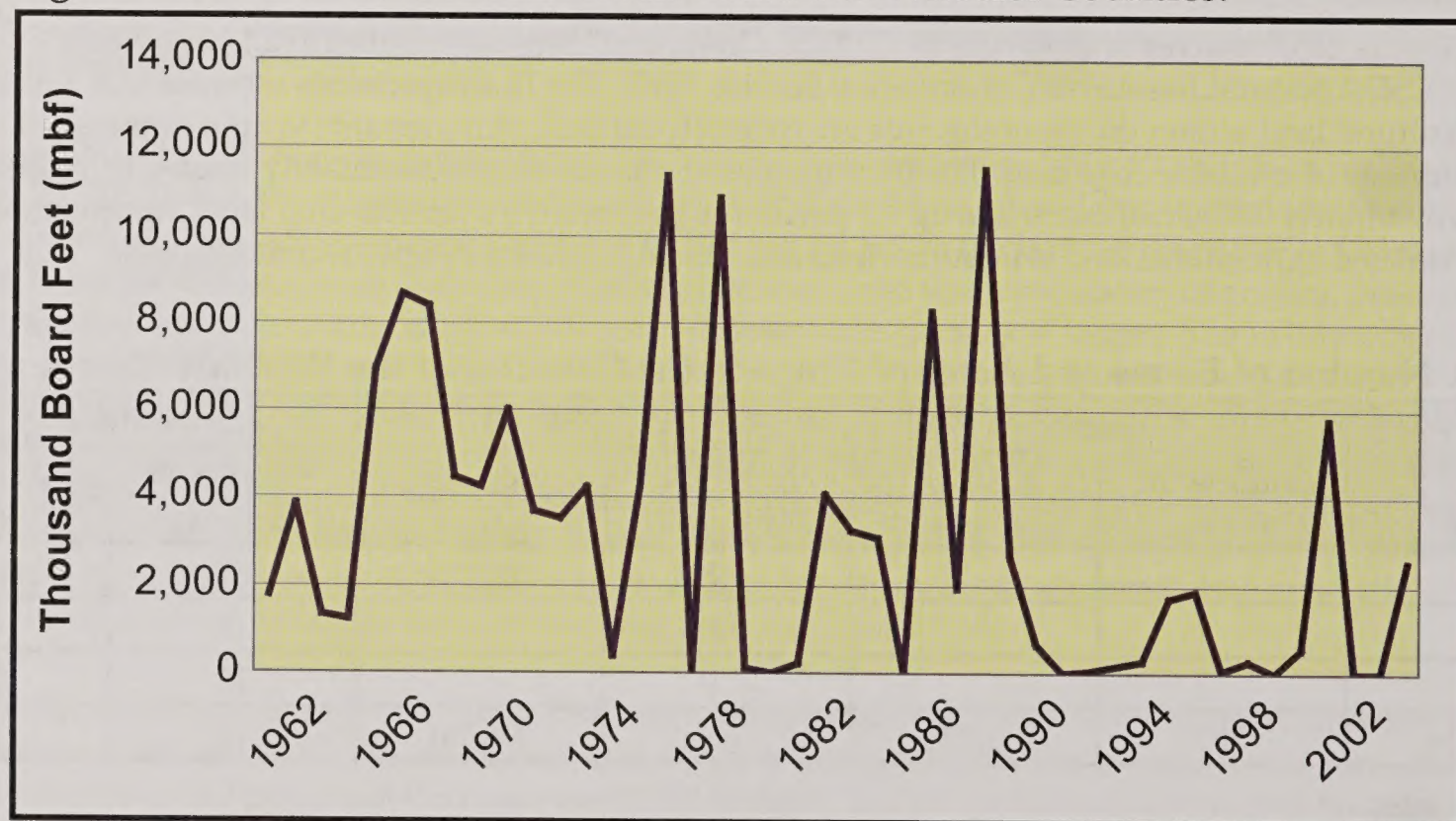
Annual harvest data for Grant and Wheeler counties indicate that total harvest have decreased from a high of 426,033 thousand board feet (mbf) in 1974 to just 33,276 mbf in 2005. Much of this decline can be attributed to harvest decreases on national forests in the area.

Gilliam and Sherman counties have had no BLM timber harvest since 1962. Baker County has no BLM land within the planning area so decisions made under this plan will not determine harvests on BLM land in Baker County. The share of BLM timber volume from the total volume harvested (from all ownerships) in the above eight counties has reached 2 percent three times between 1962 and 2005 (in 1966 2.3 percent of total county volume consisted of BLM land, 2.2 percent in 1979, and 3.1 percent in 2002). The mean BLM share over this period was less than 1 percent, with a minimum of zero and a max of 3.1 percent. This evidence suggests that over the last 40 years the role of BLM harvests has been negligible in the counties that contain land within the planning area.

If the geographic scope of interest is limited to just Grant and Wheeler counties, the historic role of BLM harvests appears similarly negligible providing slightly above 3 percent of total harvests on seven occasions since 1962.

However, in 2002 and again in 2005, the BLM provided 7.7 and 7.6 percent of total harvests in Grant and Wheeler counties, respectively. This trend indicates that the BLM has provided a greater share of harvested timber recently than it has in the previous 40 years, despite relative decreases in actual levels of harvest from BLM lands (see Figure 3-30).

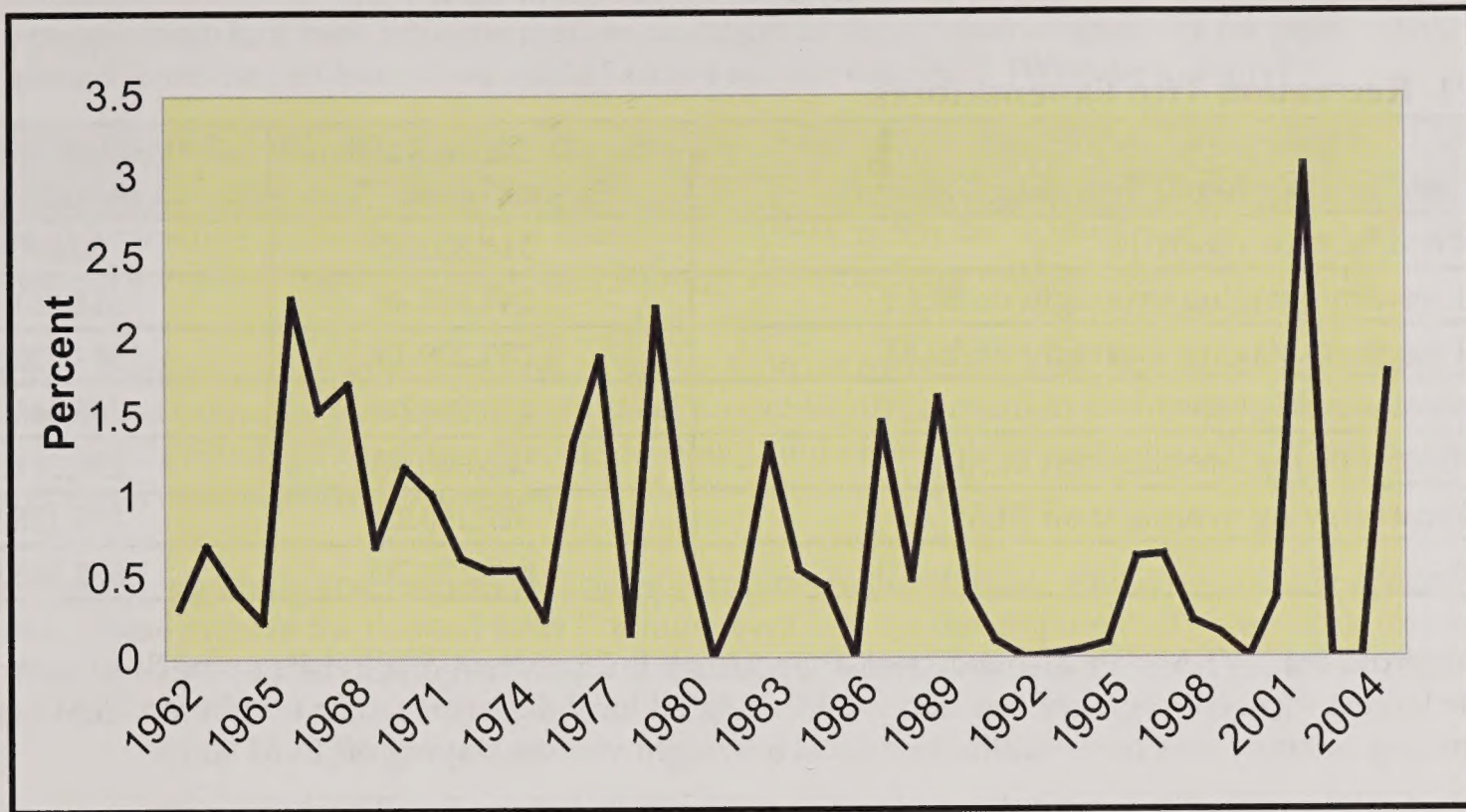
**Figure 3-30. BLM Timber Harvest in Grant and Wheeler Counties.**



Between 1997 and 2005, there was 8,604 mbf of timber offered in the planning area (JDRMP AMS 2006, p. 139) and 744,617 mbf offered from all ownerships within Grant and Wheeler counties. The BLM share of this harvest constitutes less than 1.2 percent of total harvest over this nine-year period (see Figure 3-31).

<sup>1</sup>Data are often suppressed for counties with few firms in an industry in order to protect proprietary information of those businesses.



**Figure 3-31. BLM Share of Total County Harvest in Eight County Area.**

## Tourism and Recreation

The John Day Basin provides a wide array of recreational opportunities which include boating, hunting, fishing, hiking, camping, sightseeing and paleontological edu-tourism. These activities are enjoyed by area and non-area residents. District office staff estimated there were roughly 96,000 recreational visits to the planning area in 2003. The large expanse of relatively undeveloped lands, unique opportunities on those lands, and the fish and wildlife sustained by habitats on this land attract these visitors. On their way to the planning area and once they arrive these visitors spend money on goods and services they would spend elsewhere if these opportunities did not exist. In this manner the opportunities on BLM contribute directly to the local economy by attracting these visitors.

Since expenditure information by these visitors is not available, National Visitor Use Monitoring (NVUM) data from adjacent national forest will serve as a proxy. Analyses of expenditures reported by national forest visitors show the primary factor determining the amount spent by a visitor was the type of trip taken and not the specific activity or forest visited (Stynes and White 2006, p. 2). These six trip type segments are defined below.

Visitors who reside more than 50 miles from the forest and visited BLM were:

- Non-local residents on day trips
- Non-local residents staying overnight on BLM
- Non-local residents staying overnight off BLM

Visitors who live within 50 miles of the forest and visited BLM were:

- Local residents on day trips
- Local residents staying overnight on BLM
- Local residents staying overnight off BLM

A seventh category of trip types (non-primary visits) was not included, since we are only interested in visitors whose primary activities are off BLM lands. In accordance with the report prepared for the U.S. Forest Service by the American Sport Fishing Association (2006), the data used to divide total visits into these trip types was provided by Stynes and White (2005). An average annual of total visits in the planning area was obtained from BLM's Recreation Management System and extrapolation by district office personnel. An average of the visitation proportions for three national forests adjacent to the planning area (Malheur, Ochoco, and Umatilla National



Forests<sup>2</sup>) was used (Stynes and White 2005, p. 23-25). Applying these proportions to the national forest visitor spending profiles (Stynes and White 2005, p. 11, 40) gives the results in Table 3-21.

**Table 3-21. Recreation Trip Expenditures.**

<b>Trip Type Segment / Spending Category</b>	<b>Non-Wildlife Related Expenditures (\$)</b>	<b>Wildlife-Related Expenditures (\$)</b>
Non-local residents on day trips	118,802.45	30,690.22
Non-local residents staying overnight on BLM	1,244,243.48	514,861.59
Non-local residents staying overnight off BLM	1,752,229.19	584,733.96
Local residents on day trips	650,855.00	285,641.19
Local residents staying overnight on BLM	583,890.80	233,311.10
Local residents staying overnight off BLM	527,155.27	173,128.54
<b>Totals</b>	<b>4,877,176.20</b>	<b>1,822,366.60</b>

Generalizing from the NVUM data also indicates approximately 25 percent of all visits to the BLM were wildlife related. The largest trip-type segment was non-wildlife related local day trips which numbered 26,545 and the largest spending category was non-wildlife/non-local overnight visitors staying off BLM lands.

## Mining

Although mining has played a significant role historically and culturally, employment quickly decreased following the boom of the mid 1800s. From 1969 to 2000, mining as a share of total employment has not exceeded 1.5 percent in all 9 study area counties, where data are available. In 2006, mining made up 0.4 percent of total employment in Gilliam, 0.1 percent in Grant County, and reported no jobs for Wheeler County (Economic Profile System 2009). The 2006 average wage for the natural resource and mining sector in Oregon was \$26,173 compared to an average state wage of \$38,077. In Grant County, the 2006 annual wage for the natural resources and mining sector was \$28,786, \$21,404 in Wheeler County, and unavailable in Gilliam County. While one might assume mining provides little economic value in terms of employment and income, its social value is evident from continued recreational mining and value placed on its historical importance.

## Wind

Wind energy generation has become a part of the local economy of the lower John Day River counties. The landscape has always been subject to the driving winds of the Columbia River Canyon which are now being harnessed by wind farms. Local businesses and counties are benefiting from the influx of resources and tax revenue from these projects. However it remains to be seen whether BLM land can contribute to the planning area economy and community well-being through provision of energy leases, or whether its greater contribution might be providing open spaces free of windmills.

Small Community/Cooperative Projects sell power through Power Purchase Agreements with regulated utilities. These projects are attractive because they can become community revenue generators, involve schools and local interests, and help supplement future power growth. Large commercial projects are sited in areas of strong winds, transmission access, and market demand.

As of April 30, 2009 installed wind power capacity in Oregon reached 1435 MW of power. This is up from 25 MW in 1999 (US DOE 1997). Of the 2009 total installed capacity, 40 percent is located within Gilliam, Sherman, and Wasco counties, which overlap the northern portion of the planning area.

<sup>2</sup>With only a small area of adjacent land and spending characteristics of visitors that are inconsistent with visitors to the planning area (Phelps 2006c), Wallowa-Whitman National Forest was not included.



## Niche Market Opportunities

"Some people close to it here estimate that we could get in 50,000 visitors annually for paleo activities. There are partnerships to be had here, if we could just get our act together." [Wheeler County]

It also has been suggested that "those rural areas that are prepared to evaluate the offering of nontraditional goods and services are the most likely to prosper" (Castle 1991, p. 53). Castle notes that "this does not mean that the traditional [extractive] industries will be abandoned" (1991, p. 53), but it does suggest that a willingness to take chances and try new things is an important strategy for rural communities faced with change.

According to community field work undertaken under contract by James, Kent, and Associates (JKA), county and local leadership has been active in fostering efforts at economic diversification within the planning area. Citizens and officials are interested in fostering a diverse economy, and niche markets are emerging in specialty beef, eco-tourism, and small nonindustrial businesses.

In Wheeler County, ranching and recreational niche markets are developing, which is fostering needed economic development. These include the Painted Hills Premium beef and the development of paleontological resources such as the citizen digs behind the high school and the Paleo Project. A steel fabrication company recently opened in Spray as well.

Local economic development efforts in Grant County have focused on supporting and strengthening existing businesses and promoting outdoor recreation. The growth of bed and breakfast establishments and specialty crafts companies may indicate a trend of developing market niches (Preister 2006). Prairie City has two small wood products companies that focus on post and pole and juniper operations and a juniper/pine decorative furniture shop which sells "all the furniture we can make," much of it through catalog sales (Preister 2006). Strawberry Mountain Natural Beef opened for business in John Day in 2005, and currently comprises 12 ranchers from the John Day area. In addition, a bowstring manufacturing facility exists in Grant County's new airport industrial park.

Other emerging niche markets opportunities include wind energy development in Sherman County and the OHV Park in Morrow County.

## Non-market Economic Value

The value of resource goods traded in a market can be directly elicited from information on the quantity sold and market price. Since markets do not exist for some resources, recreational opportunities, and environmental services, the elicitation of value is important since without these value estimates, these resources may be implicitly undervalued and decisions regarding their use may not accurately reflect their true value to society. These resources and recreational and environmental values that are not traded in markets can be characterized as non-market values.

Non-market values can be broken down into two categories: use and non-use values. The use-value of a non-market good is the value to society from the direct use of the asset. In the John Day Basin this occurs as recreational fishing, hunting, boating and bird watching. The use of non-market goods often requires consumption of complementary market goods such as lodging, gas, and fishing equipment.

Non-use values of a non-market good reflect the value of an asset beyond any use. These can be described as existence, option and bequest values. Existence values are the amount society is willing to pay to guarantee that an asset simply exists. Existence values in the John Day Basin might be the value of knowing that a native steelhead fishery exists. Other non-use values are thought to originate in society's willingness to pay to preserve the option for future use; these are referred to as option values and bequest values. Option values exist for something that has not yet been discovered such as the future value of a plant as medicine. In the John Day Basin bequest and option values might exist for timber or numerous plant species.

Non-market use and non-use values can be distinguished by the methods used to estimate them. Use values are often estimated using revealed preference methods or stated preference methods while non-use values can only be



estimated using hypothetical methods. While use and non-use values exist for the John Day Basin, evaluation may not be feasible during this RMP process. However this does not preclude their consideration in the planning process.

## Community Well-Being

Questions about whether the flow of resources or the existence of those resource in an area ensures stability of community life, such as population and social structure, have emerged. This is partially due to technological advances reducing demand for labor and concern of how well people live rather than what people do for a living. The concept of resource dependence has expanded beyond just economic ties based on resource outputs to noneconomic connections that include recreation, amenity values and cultural traditions (GTR-693 2006, p. 4-5).

Well-being has been distinguished on the basis of capabilities and achievements of individuals and on the social, cultural, and psychological needs of people and communities. However no definitive conceptual definition of community well-being exists (Donaghue *et al.* 2006, pp. 6 and 15). Indicators used by Donoghue, Sutton, and Haynes in their report on BLM forest management planning in Western Oregon include the diversity of employment by industry<sup>3</sup>, education (share of population, 25 years and older, with a bachelor's degree or higher), unemployment rate, percent of population below the poverty line, median household income, and travel time to work in minutes. Table 3-22 summarizes the values of these indicators by county and for the entire state of Oregon.

**Table 3-22. Community Well-being.**

Indicators of Community Well-being	Gilliam	Grant	Wheeler	Oregon
Employment Diversity (2004)*	0.5323	0.5809	0.4998	0.742
Education (2000) (years)	13.4	15.7	14.4	25.1
Household income (2004) (dollars)	\$41,993	\$34,475	\$29,390	\$42,568
Unemployment (2004) (%)	6.2%	10.2%	7.9%	7.3%
Percent below poverty level (2004)	9.7	13	13.3	12.9
Mean travel time to work (2000) (minutes)	18.1	18.7	30.8	22.2

Source: U.S. Census Bureau and \*IMPLAN

Indicators in Gilliam, Grant, and Wheeler counties positively associated with community well-being (Employment Diversity, Education and Household Income) were below the state numbers. Two of the indicators negatively associated with community well-being (unemployment and poverty) were above the state numbers for Wheeler and Grant counties. A third indicator for community well-being, mean travel time to work, was above the state level for Wheeler County. In Gilliam County, the indicators negatively associated were below the state numbers possibly indicating a higher level of community well-being than Grant and Wheeler counties. Overall, these numbers suggest community well-being in the planning area may be lower than the state as a whole.

## Resiliency

Community resilience can be described as the existence, development and engagement of community resources to thrive in a dynamic environment characterized by change, uncertainty, unpredictability, and surprise. Resilient communities intentionally develop personal and collective capacity to respond to and influence change, to sustain and renew the community, and to develop new trajectories for the community's future (Magis 2007, p. 4).

Community resources or assets, when invested, become community capital which the community can then reinvest in a continual cycle of community development. These are not limited to financial investments but also include time, energy, action and cooperation. Using the community capital framework enables the identification of the entire range of community assets. It further provides a systematic, comprehensive structure with which

<sup>3</sup>The Shannon-Weaver employment diversity index is determined by the number of industries there are in the region and how well-distributed employment is throughout all of those industries. Its values range from zero to one, with one being perfect diversity. As employment and output become concentrated in fewer industries, the index approaches zero.



to analyze the existence, interactions, change and development of community resources (Flora *et al.* 2004). These capitals are listed below.

- Natural Capital—Air, soils, water (quality and quantity), landscape and biodiversity.
- Cultural Capital—Language, rituals, ethnicity, generations, stories and traditions, spirituality, habits, and heritage.
- Human Capital—All the skills and abilities of people, self-esteem, education, leadership, knowledge, the ability to access resources and human health.
- Social Capital—Groups, organizations, networks in the community, the sense of belonging, bonds between people, trust and reciprocity.
- Political Capital—Connections to people in power, access to resources, leverage, and influence to achieve goals.
- Financial Capital—Money, charitable giving, grants, access to funding and wealth.
- Built Capital—Buildings and infrastructure in a community, schools, roads, water and sewer systems, and main streets.

Harris *et al.* (2000) conducted an assessment of communities in the upper Columbia River Basin for the Interior Columbia Basin Ecosystem Management Project (ICBEMP). The project assessed community resilience using a measure termed the “community resilience index” (CRI) to indicate a likely response to change. The index was based on community characteristics critical to a town’s capacity to adapt to future changes, including strong civic leadership, a highly cohesive social organization, local amenities and attractiveness, and a diversified or stable economy (Harris *et al.* 2000, p. 84). These elements have similar character and commonalities to those used by Flora *et al.* (2004) listed above. CRI scores for communities within the basin are listed in Table 3-23 and give an indication of the baseline resilience of the planning area.

**Table 3-23. Levels of Community Resilience for Columbia Basin Study Communities, With Levels of Scores on Scales Comprising the Community Resilience Index (2000).**

County/Town	Levels of Scores on Community Resilience Index	Levels of Scores Comprising Community Resilience Index (listed in order of weighted importance)			
		Civic Leadership	Social Cohesion	Economic Structure	Physical Amenities
Gilliam					
Antelope	Low	Low	Low	Low	Low
Arlington	Medium Low	Medium Low	Low	Medium Low	Low
Grant					
Dayville	Low	Low	Medium High	Low	Low
John Day	High	Medium High	Medium High	Medium High	Medium High
Long Creek	Low	Medium High	Low	Low	Low
Prairie City	Medium Low	Low	Medium High	Medium High	Medium High
Sherman					
Grass Valley	Medium High	Medium High	High	Medium Low	Medium Low
Wheeler					
Spray	Low	Low	Medium Low	Low	Low

Source: Harris *et al.* 2000

## Communities living within, and interested in, the John Day Basin

Communities within the John Day Basin can be described by the areas they live in or by their shared connection to the local landscape. During the resource management planning process, the public has given the BLM insightful information on their connections to the land and their interests in BLM management. In addition, the



BLM contracted with a team of social scientists to gain further detail through intensive interviews and community field work (Preister 2006). How a community is defined and where they network is often interrelated to the management of BLM lands.

In the case of analyzing the effects of Federal land management actions, the most critical impacts may be to small, rural communities (Harris *et al.* 2000, p. 5). Consequently, geographically defined communities are an important and relevant level for social assessment. Not all social scientists agree, however, that the geographically based community is always the appropriate level of analysis. FEMAT (1993, p. VII-35) makes the point that this view "only refers to physical or political boundaries and not to the relationships among people who reside within such boundaries."

Communities of interest bring together stakeholders from different backgrounds to solve a problem of common concern (Fischer 2001, p. 4). Brown and Duguid describe communities of interest as "communities of-communities" (Brown and Duguid 1991, p. 53). They provide unique opportunities to explore the linkages between people and public land.

While communities of interest often form temporarily, the issues that bring them together in the John Day Basin often present no immediate resolution. While BLM may resolve or enhance their interests, many require involvement outside the scope of BLM management or the formation of networks to bring them together. These networks provide a structure for individuals to form communities of interest and address concerns with the links between communities and BLM.

## **Networks**

Common networks in the North Fork John Day area include the Monument Soil and Water Conservation District, North Fork John Day Watershed Council, Boyer Market, Monument Café, and public schools. Other networks within Grant County include the Dayville Mercantile, churches, South Fork Player theatre group, and area schools.

Within Wheeler County, schools provide network cohesion along with cafés and restaurants. Oregon Paleo Lands Institute and OMSI's Hancock station provide organized trips, workshops and events that connect people with the local landscape. The local search and rescue and the soil and watershed conservation district also provide organizational structure for communities of interest.

Along the lower John Day River, area schools are the center of activity for many residents. The Agriculture Marketing Club, hosted by Sandy Macnab, and the Mid Columbia Producers grain growers association provide a mobilizing force for different communities of interest. Additionally the Café Moro, the Lean-to Restaurant/Goose Pit Saloon, and the Sherman County Historic Society also provide a place for exchange of information.

## **Ranchers**

In the late 19th and early 20th centuries, the first stockmen and homesteaders arrived in the area. While ranching preceded farming, ranching still plays a role in the local economy and residents find connection to the land through this tradition.

Ranchers are interested in mutual aid for fire safety and suppression, access to isolated parcels of BLM, land sale, grazing, fee hunting, cooperative projects and contact with BLM, and noxious weeds issues such as the inability to treat weeds in floodplains and wilderness study areas.

In addition, ranchers are concerned with grazing on the North Fork as it pertains to fence maintenance, gate vandalism, OHV use, noxious weeds, and access. Grazing in the North Fork, Sutton Mountain, and throughout the planning area is a traditional land use valued culturally. Ranching has played a historic role in the community, and many ranchers and area residents would like to see this traditional use continue.

## **Individuals and groups who give a high priority to resource protection**

Fish, wildlife, riparian/upland health, soils, scenery and other resource values in the John Day Basin are a priority to many individuals and groups. Control of noxious weeds, maintenance of healthy fire ecosystems,



and other criteria were often suggested as means to achieve healthy ecosystems. Land use designations were often suggested as a means to maintain or enhance these values. Other comments suggested the designation of the North Fork John Day River as a wild and scenic river (WSR) segment would result in additional use and consequent resource damage as a result of being "loved to death." Many of these individuals also believe the direction provided in the Oregon Land Exchange Act provides sufficient direction to protect resource values while others believe WSR designation would further protect these resource values. This community of interest also advocates limiting grazing, motorized use, and chemical use in WSRs. This community sees limits on motorized use, mineral withdrawal, and grazing as effective tools to protect resources. Many individuals and groups uniquely identify with mid-Columbia River steelhead, elk, deer, and wild horses, and the protection of their habitat. A strong interest in protecting resources for future generations was also often expressed.

Many of these individuals believe the forgone economic benefits from resource use are realized as improved resources attract visitors and thus provide service-based economic benefits to the area. Local citizens are aware of how the unique nature of the local area contributes to their current and future social and economic well being.

## **Individuals and groups who give a high priority to resource use**

Within this community people believe that the traditional industry sectors of timber production and agriculture are steady or declining. Even though these sectors remain important culturally and politically, the sense is that economically, the writing is on the wall. People expressed high degrees of uncertainty about the future of local woods products manufacturing. In addition, ranching is a highly valued way of life but ranchers and townspeople noted that ranches require second jobs.

Many of these groups and individuals expressed a concern with restrictions on uses without adequate rationale about consequent resource damage. Others maintained access was important to continue commercial uses of public and private lands their livelihoods depend upon. For example, the Oregon Department of Transportation would like mineral material available for future road maintenance.

## **Recreationists**

Recreationists have traditionally used the area for hunting, fishing, camping, hiking, boating, photography, sightseeing, wildlife viewing, recreational mining and OHV use. The wilderness (e.g., character, solitude, and scenery) appeals to many users of the planning area, especially the newly acquired lands along the North Fork John Day River.

Many believe designation as a wild and scenic river would threaten this unique recreation experience by encouraging more use. Others believe the WSR designation would limit motorized use and thus enhance the wild and scenic recreation value. Some would like additional campgrounds along the North Fork while others desire an experience without facilities believing they would attract users and degrade the desired experience. Grazing and timber harvest are believed to degrade the recreation experience by some recreationists.

While motorized use is of interest in the area, especially during hunting season, the public often sees a need to limit use to designated routes in order to protect resources and the desired recreational experience. However, concern exists that OHV access will be too limited and may impede a tradition of dispersed use commonly used by many types of recreationists. Many recreationists wanted better communication infrastructure within the river canyon and wondered about uses allowed within Wilderness Study Areas.

## **Area Residents**

Area residents cannot be characterized by one socio-demographic group. There are individuals and groups who have lived in the area for multiple generations and identify strongly with cultural traditions specific to the area. Other residents have moved to the area more recently and are tied to the landscape in different ways. They often value these same cultural traditions but often came for different reasons. As residents, their connection to BLM unifies them with a group of common interests.



One of the most widespread interests specific to area residents includes impacts to private property. The effects of BLM management on property values and private property rights were commonly expressed; for example water rights, the ability to construct adjacent to WSR corridors and changes to access of private lands with transportation planning.

The impacts from increased use on BLM land were a quality of life concern for area residents. Fire protection, noxious weed invasion, vandalism, trash disposal, OHV noise, and trespass were sources of apprehension. Increased costs from these changes such as fence maintenance and the need to now limit access historically allowed because of damage to private property was a concern.

These residents advocated for multiple use of public land with stipulations on OHVs and other uses to maintain public safety and avoid resource damage. A strong desire to work with BLM to find solutions to these common problems was expressed, such as coordinating fire treatments, obtaining easements for public access, and helping to provide public education on resource condition. Area residents also stated a desire for economic opportunity such as jobs for area youth and possible land ownership adjustments to improve quality of life.

## **Individuals and groups interested in access**

Access across private land to BLM parcels and across BLM to private land for recreation, commercial or cultural uses involves many different types of communities. While access for specific communities of interest has been noted, there are individuals and groups with access concerns that are not of interest within other communities.

The Preister report (2006) noted that connections between access and community cohesion was of significant interest with the concept of "neighboring." When new landowners cut off access across their lands to public lands traditionally used by locals, community bonds are affected. James Kent and Associates suggest that "if the land use plan developed by BLM could be done in a way to re-invigorate the value of neighboring in the community, a long-term benefit will be realized."

Keeping access equitable was a point frequently made; for example if access to hunting can only be provided across private lands, increasingly regulated by fees, the working class may be less able to access public lands beyond.

The ability of the elderly and the disabled to access an area given various limitations on motorized use (such as WSR designation) is important to the public. Interest in trail maps was also commonly expressed, as was a desire for continued access to culturally important areas. People often expressed interest in the future of access with a navigability determination along stretches of the John Day River.

## **OHV Users**

The use of OHVs in the planning area cannot be ascribed to only one type of user. There are some opportunities in the planning area that provide for concentrated use where OHV users can pit their skills and machines against challenging terrain. The landscape also provides opportunities for dispersed use of OHVs for recreation, cultural, and commercial uses. Individuals and families enjoy OHV use on and off trail in order to view scenery and explore. Others utilize OHVs for hunting, tending cattle, or collecting antlers. These dispersed uses can be contrasted with the concentrated use common in play areas. Trails may develop from dispersed use leading to concentrated use; however, the desired experience is quite different between these OHV groups (motorcycle, ATV, and four-wheel drive users).

As a community they are both interested in maintenance of their lifestyle opportunities within the planning area. Avoiding resource damage is often expressed. The need for limitations on use was expressed when resource damage was apparent. Little support exists for closures where no resource damage can be proven.

## **Individuals and Groups interested in less government regulation**

Some area residents and users of public lands are interested in maintaining cultural uses uninhibited by further or existing government regulation. They see restrictions to limit use as unnecessary or a personal affront to



their ways of life. Motorized use restrictions, special area designations, road closures, and limits on commercial uses are a few examples. They often see special area designations as redundant bureaucratic steps limiting management options. This community advocates for more local control and believes payment/permit systems unduly isolate segments of the population.

## Niche Market Opportunists

Significant interest abounds within the basin to capture a comparative advantage from amenities within the planning area. The unique natural history creates tourism opportunities many locals see as potential for business ventures. Paleontological, voluntourism, natural history interpretation, boating, and hunting/fishing guiding are just a few of the opportunities provided by the local landscape. In 2001 Wheeler County launched the "Paleo Project" as its lead economic strategy which encompasses program and facility development and the enhancement of the region's natural and cultural resources. Additionally, all the counties containing BLM land within the planning area have formed a partnership to promote tourism opportunities unique to the area called "Oregon's Rugged Country" (State of Oregon 2007).

The landscape also attracts an influx of hunters and fishermen to the area in seek of game birds, elk, deer and fish. Bow hunting for deer and elk has increased significantly in the last few years which may have some relation to the recent start of a bowstring manufacturer in the John Day airport industrial park. Other opportunists see potential to benefit landscape health by utilizing juniper removed during vegetative treatments from public and private land. These trees are currently utilized for furniture, crafts, occasionally biomass and building material. The natural beef niche market is growing quickly. Painted Hills Natural Beef started in the mid-1990s in Wheeler County, and Strawberry Mountain Natural Beef started in 2005 in John Day. Wind energy in the lower John Day region is growing quickly as renewable energy becomes more viable and sought after source of energy. Solitude, scenery and the sense of wide open space that comes from the unique area landscape provides a sense of adventure from the undeveloped landscape.

Opportunities for niche markets are of high interest. Whether this is Painted Hills Beef or opportunities associated with paleontology, people identify with these landscape characteristics and traditions and seek opportunities to accentuate them in new businesses.

## Native American Trust Responsibilities

Members of the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and the Confederated Tribes of Warm Springs Reservation of Oregon (CTWSRO) exercise rights to hunt, fish, and gather on lands ceded to the Federal government within the planning area. Much of the planning area is within the ceded lands of the CTWSRO. The CTUIR have limited ceded lands but strong interest in the planning area. The Burns Paiute have traditionally occupied portions of the upper John Day country. The Confederated Tribes and Bands of the Yakama Nation have also expressed interest in the planning area. The Yakama are known to have used the area for hunting, fishing, gathering, or to attend social events.

Since the BLM manages portions of the ceded lands that are within the traditional use areas of the tribe, the BLM has a trust responsibility to provide the conditions necessary for Indian tribal members to satisfy their treaty rights. The BLM also acknowledges a responsibility to consider the interests of tribes that are known to have used BLM managed lands.

Currently, Native American tribes are not dependent on commodity resources from lands managed by the Prineville Field Office for their economic livelihood. However, they do use BLM public lands resources for subsistence and cultural purposes.

## Environmental Justice

According to the Council on Environmental Quality's (CEQ) Environmental Justice Guidelines for NEPA (1997) "minority populations should be identified where either: (a) the minority population of the affected area exceeds



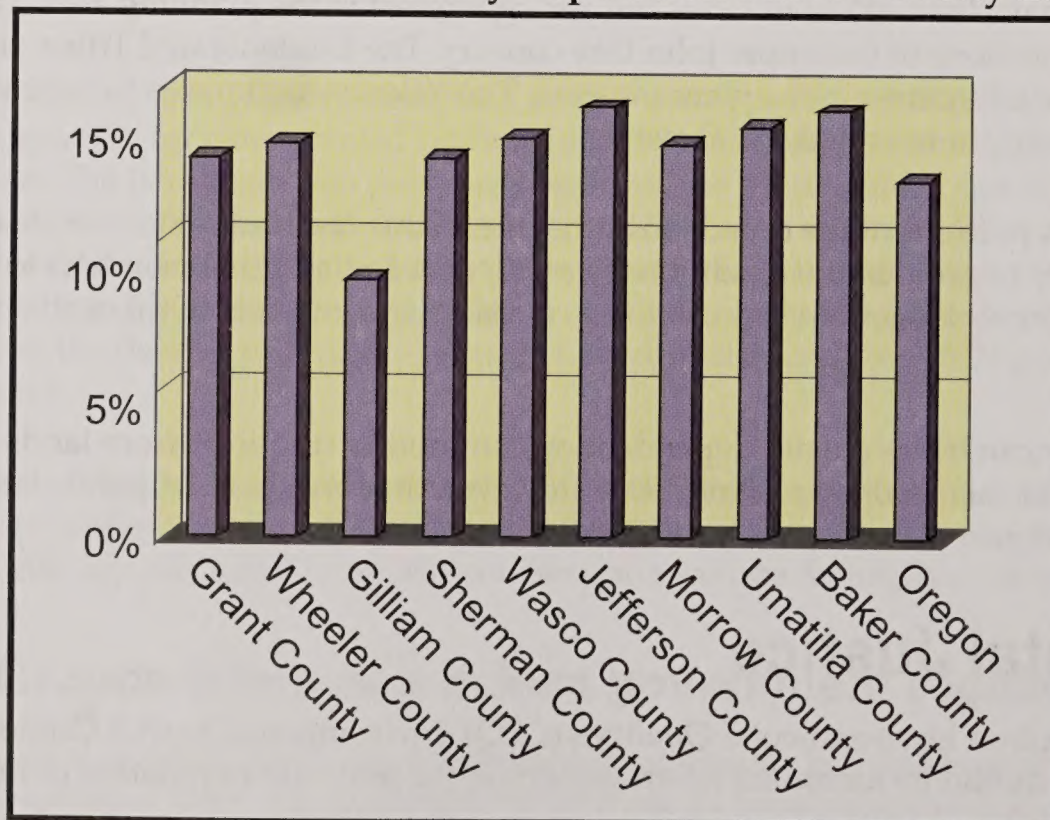
50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis." Table 3-24 shows that shares of American Indians exceeded the state share in Grant County and shares of several other minority populations in planning area counties exceed that of the state in 2008 (race and ethnicity are presented separately since Hispanics can be of any race). Thus, the U.S. Census data suggest minority populations likely meet the CEQ's Environmental Justice criterion within planning area counties.

The CEQ guidance on identifying low-income populations states "agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect." Figure 3-32 shows the share of those living below the poverty level was greater than the state in all counties except Gilliam County in 2004. Thus, the Census data indicates that low income populations likely exist within planning area counties.

**Table 3-24. Racial and Ethnic Composition of Planning Area Counties (2008).**

	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Two or More Races	Hispanic Origin
Oregon	90.1%	2.0%	1.4%	3.6%	0.3%	2.5%	11.0%
<b>Counties</b>							
Baker	96.3%	0.3%	1.3%	0.5%	0.0%	1.6%	3.9%
Gilliam	97.5%	0.3%	1.0%	0.1%	0.0%	1.0%	3.9%
Grant	95.7%	0.1%	2.0%	0.2%	0.1%	1.8%	3.3%
Jefferson	79.4%	0.8%	16.4%	0.5%	0.3%	2.6%	20.8%
Morrow	94.9%	0.4%	2.1%	0.7%	0.1%	1.8%	29.8%
Sherman	95.0%	0.2%	1.9%	0.5%	0.0%	2.3%	7.7%
Umatilla	92.6%	1.2%	3.6%	0.9%	0.2%	1.5%	19.3%
Wasco	91.7%	0.4%	4.2%	1.2%	0.6%	1.9%	12.3%
Wheeler	96.0%	0.1%	1.5%	0.4%	0.1%	2.0%	6.4%

**Figure 3-32. Percent of County Population below Poverty Level.**





# Resource Uses

## Native American Uses

American Indian uses involve a range of traditional economic, social, and religious practices performed by indigenous tribal groups on public lands. There are many facets to these uses. They can range from the protection of past burial sites to concerns about availability and access to root gathering areas to the quality of water that contributes to anadromous fish runs. The BLM has legal responsibility under treaty authority, federal law, and formal agreements with tribes to make a good faith effort to consult with and consider tribal concerns and interests when planning land use actions.

The distribution of these uses is not easily defined or well known. Many tribal members do not divulge this information either within a tribe or with agencies. The information the BLM does receive from tribes about use areas is withheld from the public as a condition of the special relationship between the tribes and the agency.

Adverse impacts to American Indian traditional use sites include alteration of sites and site settings, loss of vehicular access to sites, land tenure adjustments, and noise and visual intrusions to site setting. Disturbance or destruction of spiritual sites occurs when physical elements such as cairns, mounds, or burials are damaged or removed. Adverse impacts to traditional use resources include reduction or elimination of resources such as various roots, berries, fish, and other resources. Activities that result in the removal of competing vegetation, such as fuel reduction, could provide a beneficial impact through increased growth of traditional use plants. Likewise, land tenure adjustments can provide a beneficial impact by eliminating inaccessible tracts of lands and acquiring lands that are more accessible.

Management actions that could affect traditional use sites and resources include any that would result in ground disturbance, alterations of plant communities, loss of key landforms or settings, and access restrictions. The actions include timber harvest, road construction and road decommissioning, fire and fuels management, noxious weed eradication, permits for commercial and non-commercial uses of special forest products, land sales and land exchanges, and off-highway vehicle management. Making a good faith effort to consult with recognized tribal governments and tribal members early in project planning to identify locations and resources of concern would reduce or eliminate most effects to sites and resources of interest to recognized tribes. The BLM maintains agreements with most of the recognized tribes that have an interest in the planning area, specifically the Confederated Tribes of the Warm Springs Reservation, the Confederated Tribes of the Umatilla Indian Reservation, and the Burns Paiute Tribe.

## Livestock Grazing

Grazing is one of the most visible and established uses of BLM managed lands. The public lands are an integral part of ranching in the area because of their scattered distribution and ability to provide forage during a critical time of the year. There are many ranches with several hundred acres of public grazing land scattered throughout. Generally these lands are best managed with the adjacent private lands since it is not practical to fence them separately. The larger blocks of several thousand acres are easily managed separately from private lands. These blocks of BLM managed lands are generally located at elevations where they provide excellent forage from early spring to early summer. This is an important transition period as livestock move from winter feeding areas to summer ranges. It also has utility as livestock return in the fall.

Livestock grazing is authorized on 432,600 acres or 95 percent of public land managed by the BLM in the planning area. Because BLM lands in the John Day Basin consisted of mostly scattered tracts, these lands were not included in a grazing district and are managed under Section 15 of the Taylor Grazing Act.

Under Section 15 of the Taylor Grazing Act, BLM lands within the planning area are leased for grazing on an animal unit month (AUM) basis. An AUM is the amount of forage a cow and calf consume in one month. The number of AUMs available was determined by range surveys completed between 1967 and 1974 in the John Day River Basin. These surveys established the grazing use levels that continue to be authorized today.



There are 229 grazing allotments that vary in size from 22 acres of public land to over 25,000 acres (see Map 10 in Chapter 2). Since the distribution of public land is generally scattered, the number of acres in any one allotment tends to be small. The majority of allotments, 63 percent of the total, contain less than 1,000 acres of public land. Information specific to each allotment is shown in Appendix J. The total number of active AUMs is 28,500. As with the acreages, the number of AUMs per allotment is generally small; 71 percent or 163 allotments contain 100 or less AUMs. Fifty allotments contain 10 or less AUMs.

Allotments in the North Fork John Day area that are affected by Congressional language in the Oregon Land Exchange Act of 2000 (OLEA) are highlighted in Appendix J. Pre-OLEA public lands are intermingled with North Fork John Day acquired lands and as a consequence cannot reasonably be managed differently than the acquired lands. The result is that, following the guidance of Congress to manage the North Fork John Day acquired lands for the benefit of fish, wildlife, and recreation, grazing is not now permitted on the pre-OLEA public lands. One allotment in this area (North Fork #4029) contained North Fork John Day acquired lands but was left available for grazing since the acquired lands made up only 12 percent of the total, and the allotment had a high percentage (60 percent) of private land. Though this allotment is "open," it has been inactive since 2001.

The BLM Prineville District completed an Ecological Site Inventory of the public lands in the lower John Day River Basin in 1982. This inventory identified ecological sites, delineated geographical areas across the basin on the basis of these ecological sites, and assessed the ecological condition of the geographical areas with respect to what was believed to be their potential.

In 1997, the Oregon/Washington BLM adopted the Standards for Land Health and Guidelines for Grazing Management (USDI BLM 1997) and incorporated the "Rangeland Standards & Guidelines" into existing plans. The Standards meet the intent of 43 CFR 4180 (Land Health regulations), which contain the objectives to "... promote healthy sustainable rangeland ecosystems; to accelerate restoration and improvement of public rangelands to properly functioning conditions ... and to provide for the sustainability of the western livestock industry and communities that are dependent upon healthy, productive public rangelands." The Standards are the basis for assessing and monitoring rangeland conditions and trend. The assessments evaluate the standards and are conducted by an interdisciplinary team with participation from lessees and other interested parties. Based on 43 CFR 4180, if livestock are a significant causal factor in failure to meet a Standard, as soon as practical but not later than the start of the next grazing season, management will be implemented to ensure that progress is being made toward attainment of the standards.

Rangeland Standards & Guidelines assessments have been completed on 119 allotments totaling 279,302 acres, which equates to 45% and 65% respectively of the total in the planning area. Of the completed assessments, 42 percent of allotments and 29% of acres are meeting all standards and 58 percent of allotments and 71% of acres are failing one standard or more. Of allotments that failed, 14% (35,360 acres) had livestock as a causal factor. Grazing management adjustments have already been implemented on all of these acreages except 5,947, and efforts are underway to address the remaining acres. The remaining 86% of allotments (163,471 acres) not meeting standards failed due to increasing juniper stands, noxious weed infestations, impacts associated with past uses, or other reasons.

A prioritization process was developed to direct assessments to allotments with the highest potential for resource and grazing management concerns first. Overall it appears livestock are a primary contributor in a minority of the grazing allotments not meeting the Standards for Land Health. Actions to address failure to meet a Standard can include change in season of use, forage allocation levels, grazing intensity, or discontinuation of grazing in all or a portion of the allotment.

Most grazing allotments in the planning area have been assigned to a management priority category so management efforts and funding can be directed to areas of greatest need. These categories are "Improve" (I), "Maintain" (M) or "Custodial" (C). The I allotments are usually areas with a potential for resource improvement where the BLM controls enough land to implement changes. The M allotments are usually where satisfactory management exists and major resource conflicts have been resolved. Most C allotments are small unfenced tracts intermingled with larger acreages of non-BLM managed lands, thus limiting BLM management opportunities. There are presently 79 Improve allotments, 25 Maintain, 125 Custodial, and three not assigned to a category.



In 2001 the Prineville District published the Record of Decision for the John Day River Management Plan (JDRMP) that amended the John Day and Two Rivers RMPs. One of the primary actions identified in this amendment were grazing adjustments necessary to protect the Outstandingly Remarkable Values (ORVs) of the wild and scenic river. Actions included changing the season of use, removing grazing from conflict areas, and adjusting permitted use.

The BLM lands along 58 miles of the Wild and Scenic John Day River (from Clarno to Cottonwood Bridge) have exhibited an improvement in riparian conditions. Inventories between 1995 and 2008 indicate an increase in willow habitat from 31 acres in 1995 to 226 acres in 2008. Percent increases in acres of willow was almost twice as much in areas available for managed grazing (1,122%) than in areas excluded from grazing (629%). (The inventory data and accompanying photo point images are on file at the Prineville District BLM office). Though preliminary, this analysis of the inventories indicates that recovery rates are equal between grazed and ungrazed riparian areas (John Day WSR Plan, 2001, p. 10), meeting the standard of protecting and enhancing the Outstandingly Remarkable Values on the John Day Wild and Scenic River.

Generally, the resource conditions in the majority of allotments have been steadily improving. Grazing practices have changed for the benefit of vegetation, but juniper encroachment continues even with changes in grazing management. As rangeland conditions and site-specific objectives change, allotments are shifted from one category to another.

Allotment Management Plans (AMPs) are sometimes developed for larger I or M category allotments. An AMP prescribes the manner and extent that livestock grazing is conducted to meet multiple use, sustained yield, economic, and other objectives. A grazing system is generally incorporated into the plan. An AMP is implemented when it is incorporated into the lease and accepted by the lessee, and is operational when supporting range improvements and the grazing system have been initiated.

Urbanization and changes in ranch management are shifting the emphasis on public land from livestock grazing to hunting and recreation pursuits. More ranches are being acquired by individuals from large metropolitan areas who either hire a ranch manager, lease grazing to a neighboring rancher, or take nonuse. This trend is still small in the John Day Basin, but it appears to be growing.

## Forest Products

To the casual visitor traveling through the John Day Basin, forest resources on BLM lands are not immediately visible. It is true that commercially valuable trees are not as widespread on BLM managed lands as on some private and Forest Service managed lands. Nevertheless these resources are valuable. Forest vegetation has the potential to provide both biological/physical and socioeconomic benefits.

This section will address forest products: timber production (sawlogs), biomass (wood chips and hog fuel), and small vegetative products (firewood, posts, poles, etc.). The size, location, accessibility, and type of material available vary throughout the analysis area. Based on these limitations, generating forest products is not feasible on all areas of forest vegetation. Map 18: Key Vegetation Elements shows timber management zones. These zones have sufficient forested resources to provide forest products if production is consistent with management objectives.

Within the Interior Columbia Basin the BLM oversees management of approximately six million acres of commercial forest land (USDA Forest Service 1996, p. 56). Forest land management responsibilities within the planning area are consistent with proportions found within the Interior Columbia Basin as a whole. Within the planning area the BLM has approximately 79,688 acres of forest land of which 11,994 acres of forest land were acquired through the Oregon Land Exchange Act of 2000. Comparatively the USFS controls 1,645,312 forest land acres (Forest Inventory and Analysis Mapmaker 2006) within the planning area.

The largest acreages of forest lands occur in the Rudio Mountain, Dixie Creek, Little Canyon Mountain, and North and South Fork John Day River areas. Most of the acquired forest stands are located along the North Fork of the John Day River.



## Timber Management

Prior to 1985 the forest vegetation was managed primarily for the production of timber while enhancing other resource values.

Within the John Day RMP area, between 1987 and 1997 a total of 11 timber management projects and 4 modifications to these projects were offered and sold. Total volume sold during this 11-year time span equaled 24,345 thousand board feet (mbf) which is an average of 2,213 mbf annually.

Since 1997, there have been four timber sales offered and sold. All four projects were timber salvage projects. All projects included the salvage of dead and dying trees but only two projects involved some commercial thinning of green trees in order to attain prescribed basal areas. None of these projects occurred within the area managed under the Two Rivers RMP during this same time span. During this 9-year period (1997–2005) 8,604 mbf of volume was offered, an average of 956 mbf annually. According to the John Day and Two Rivers RMPs, 32,220 mbf could have been sustainably offered during this same 9-year period.

The average annual rate of 956 mbf is typically enough volume to supply local mills for a period of a few weeks. Even during the most active of timber sale years, the BLM in the past had been responsible for one-third or less of the necessary volume to support local mills.

Demand for timber from public land in the planning area will continue as long as there is a demand for wood products. If the current passive management trend continues, this demand will not be fulfilled.

## Firewood

The current availability of firewood meets or exceeds demand. In recent years, the BLM has been issuing permits for approximately 120 cords per year. Prior to 1985, there was a greater demand for firewood. At that time firewood from logging slash was considered a waste product and all permits were free use. More than 50 permits were issued annually within the John Day RMP area. In the early 1980s, the BLM started selling firewood permits for two dollars per cord. The current cost for a firewood permit is five dollars per cord.

In addition to forest species, juniper slash is also made available for firewood. Occasionally, slash piles have become available and the BLM issues free use permits to utilize the more undesirable material for firewood. In recent years there appears to be an increase in the amount of illegal firewood removal.

## Other Vegetative Products

Demand for other vegetative products (post, pole, cones, juniper bows, biomass) has been steady. These products are made available upon request, generally 5-10 permits per year primarily for post and poles. Current supply meets or exceeds demand and is expected to remain adequate in the future.

The removal of forest biomass for energy production has been considered within the planning area. Although sufficient biomass exists on BLM lands for energy production, many of these lands are scattered with limited access. This reduces the economic feasibility with current technology and infrastructure. There is a potential benefit to the wildland-urban interface (WUI) by removing biomass; however, the amount of WUI in the planning area would not provide a substantial or sustainable amount of biomass.

Prairie Wood Products in Prairie City has a cogeneration plant associated with its mill. While the area of forestland controlled by the BLM is small, future juniper removal could supplement energy production needs at this plant. In 1988 Grant and Wheeler counties had juniper trees on more than half of their non-timber land area, indicating an expansion of juniper into many areas that formerly had little to no juniper (Gedney *et al.* 1999).

Native American tribal groups and individuals use various plants from public lands in the planning area for traditional foods and industries. This use remains largely uncharacterized, although it is subject to treaty rights for gathering in ceded lands.



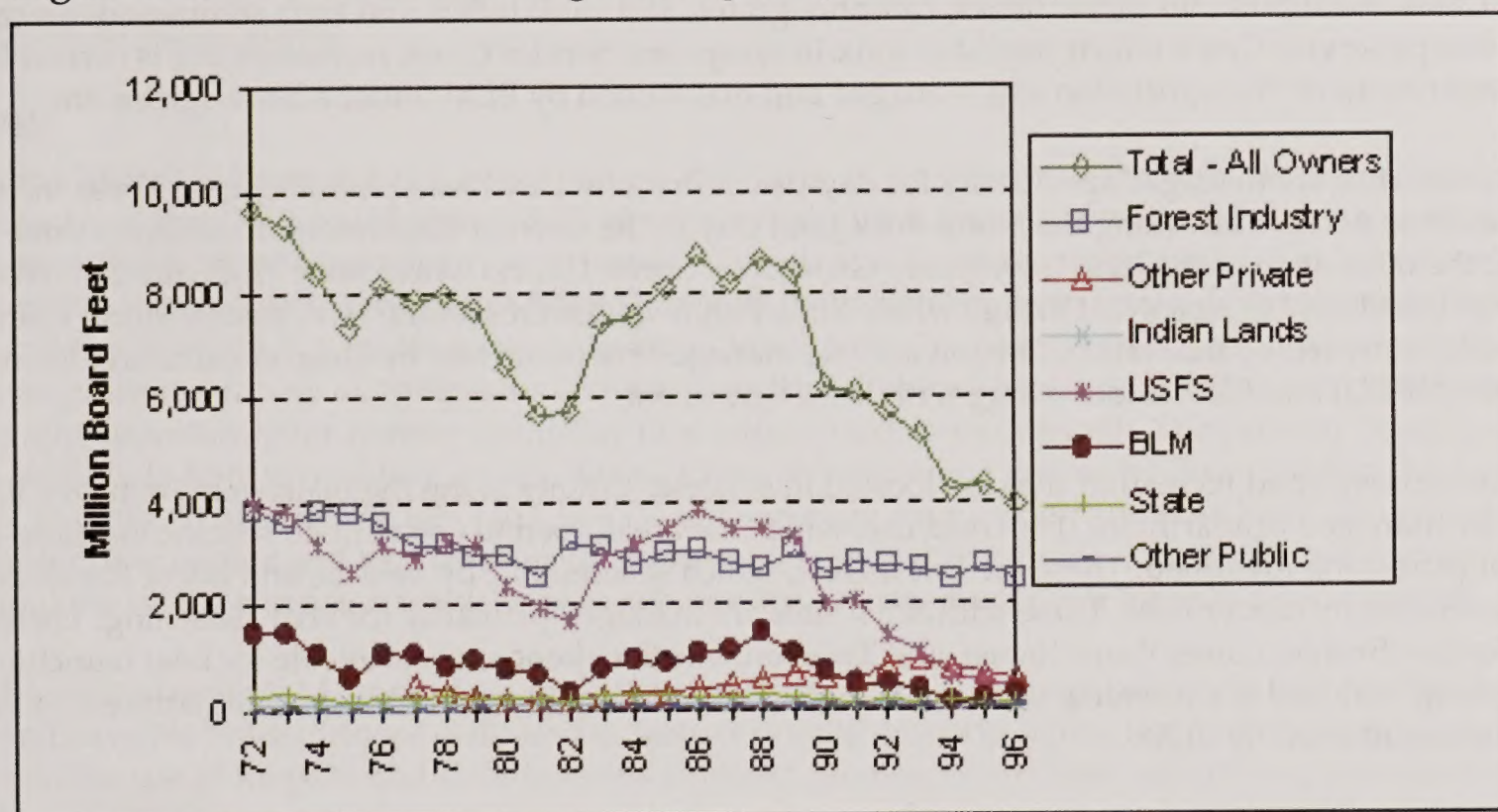
## Trend

Timber harvest volumes have declined across most ownerships since the early 1990s. The decline has been the most pronounced on Federal lands during that time frame. Figure 3-33 represents statewide trends. Trends within the John Day Basin are similar.

The availability of firewood material is expected to continue to increase. The increase of the material is a result of the increase in mortality due to insects and diseases. As stressed trees die they lose their commercial value and are often available for firewood. However, only a small percentage of these dying trees are within a reasonable distance of open roads and available for firewood use. Demand for firewood in the planning area has been minimal and is not expected to dramatically increase within the next 10 years.

As energy demands increase and additional technologies are developed, demand for biomass is expected to increase and become more economically feasible.

**Figure 3-33. Timber Harvesting in Oregon by Ownership.**



## Recreation

A wide variety of recreation opportunities is provided in a variety of settings on BLM land throughout the John Day Basin. Some of these activities include whitewater rafting, kayaking, canoeing, fishing, hunting, horseback riding, OHV riding, camping, bird watching, rock hounding, photography, and sightseeing. Opportunities also exist for driving for pleasure and sightseeing for geological, botanical, zoological, archaeological, historical features and points of interest. In addition to locations where BLM public land is concentrated, recreation also occurs on state or county roads that provide access to BLM and USFS public lands.

An example of high quality sightseeing opportunities on public lands is the Journey Through Time Scenic Byway. This byway highlights the John Day Basin's geologic and human history as it travels from Biggs, Oregon near the John Day River's confluence with the Columbia River, parallels miles of the John Day River including the scenic Picture Gorge area, and continues east of the city of John Day. Other popular sightseeing routes include the South Fork Back Country Byway along the South Fork John Day River near Dayville, and the North Fork of the John Day River northeast of Monument. An important aspect of sightseeing is the opportunity to view and photograph wildlife ranging from tiny hummingbirds to deer, bighorn sheep, elk, black bears, and perhaps the occasional glimpse of a mountain lion. Sightseeing also occurs throughout the planning area.



Visitor use of the John Day Basin has increased and the season over which use occurs has expanded. Estimated annual use of BLM lands within the John Day River corridor was approximately 96,000 use days in 2003.

Approximately 40,000 use days occur on the uplands within the JDBRMP area. Most visitor use occurs on the John Day River during the spring, summer and fall. In the spring and summer, visitor congestion occurs at popular watercraft launch and take-out sites at Service Creek, Twickenham, Clarno, and Cottonwood Bridge. In the fall, hunting season encourages a similar increase in visitors.

## **Recreation Facilities**

There are 16 developed recreation sites managed by BLM within the planning area (see Map 11, Chapter 2). Most of these sites are adjacent to the John Day River. None of the recreation sites within the planning area provide drinking water or trash receptacles. Most sites meet the accessibility requirements under the Americans with Disabilities Act.

BLM manages four developed campgrounds which are also available for day-use; Big Bend and Lone Pine on the North Fork John Day near Kimberly, and Muleshoe and Service Creek on the main stem near the community of Service Creek. Each provides picnic tables, campfire grates, and vault toilets and each accommodates car camping, except Service Creek which provides walk-in campsites. Service Creek recreation site is owned by the Oregon Department of Transportation and managed and maintained by BLM under a lease agreement.

Four recreation sites are managed specifically for day-use in the John Day Basin planning area. These include Monument River Access Park along the North Fork John Day in the town of Monument. In addition three sites exist along the main stem of the John Day; Shady Grove near Spray, Clarno where State Highway 218 crosses the river west of Fossil, and Cottonwood Bridge where State Highway 206 crosses the river east of Moro. Clarno and Cottonwood are owned by the state of Oregon and are managed cooperatively by Oregon Parks and Recreation Department (OPRD) and BLM under a long-term lease agreement.

Five additional developed recreation sites are located in Wheeler County along the main stem John Day River. Two sites are managed primarily for dispersed use, which are areas open to use with no specific locations for camping or picnicking identified. These are Priest Hole, which is accessible by vehicle, and Burnt Ranch Beach, which is accessible by foot or boat. Three additional sites are managed primarily for boat launching. These include Wooden Bridge, Lower Burnt Ranch, and Twickenham. Twickenham is available for boat launching and vehicle parking only and is a privately owned site managed under agreement by Oregon Department of Fish and Wildlife and maintained by BLM.

The BLM manages two interpretive sites located along the historic Oregon Trail. These are the John Day Crossing on the west side of the main stem John Day near McDonald Crossing, and the Four Mile historic site on the east side of the main stem near the community of Ione. These sites contain wooden ramadas that house interpretive displays depicting emigrant life on the Oregon Trail. John Day Crossing is owned by Sherman County Historical Society and currently managed by BLM. A small picnic site, Rock Creek, is located near McDonald Crossing on the east side of the main stem.

Within the planning area, there are many developed recreation sites managed by other federal, state, and county agencies. Developed campgrounds include Clyde Holliday State Park along State Highway 26 near Mount Vernon, Bear Hollow and Shelton Wayside operated by Wheeler County, and approximately 12 U.S. Forest Service campgrounds spread throughout the Ochoco, Strawberry, and Blue Mountain Ranges. Several private campgrounds are also available within the planning area.

The most popular day-use sites within the planning area are located within John Day Fossil Beds National Monument. These day-use sites are set aside to study, protect and display the rich fossil beds and unique geological features of the John Day River Valley. The monument includes three separate management units; Clarno, Painted Hills, and Sheep Rock. The Thomas Condon Paleontology Center in the Sheep Rock Unit opened in 2005 and serves as the monument's visitor center. Hiking trails, interpretive displays, and picnic facilities are available in all three units. A variety of city and county parks are also available for day use.



Trends show a gradual increase each year in visitor use at BLM developed recreation sites. Use at the John Day Fossil Beds National Monument is expected to increase considerably as visitors discover the new Paleontology Center. Since there are no camping facilities available within the monument, there is expected to be an increased demand for public and private campgrounds located near the monument.

Rivers, Scenic/Back Country Byways, and local events are increasingly being promoted as travel and tourist destinations by local Chambers of Commerce and other groups. The acquisition of additional public lands along the North Fork John Day (a result of the Oregon Land Exchange Act of 2000) brings a potential for new recreation opportunities to the region.

## **Recreation Activities**

### **Rockhounding**

Rockhounding is a popular recreation activity in the planning area. Some public lands in the planning area contain agate, quartz, calcite, zeolites, petrified wood, dendrites, thunder eggs, opal, ammonites, and leaf fossils. These prized items occur on scattered parcels of public land, some of which are surrounded by private land and contain no legal public access.

### **Boating**

Floating the John Day River in a raft, kayak, canoe, drift boat, or pontoon boat is a popular recreational activity. When asked in a 2000/2001 social survey, 94% of respondents listed peace and solitude, viewing scenery and wildlife, being with friends and family, and riverside camping as the most important reasons they boat the John Day River. The most popular sections for boating include the main stem from Spray downstream to Cottonwood Bridge, and the North Fork from Dale downstream to Monument. In some sections, multiple launch points and easy access present a variety of options for one-day float trips. Other sections, with little to no public road access, offer the rare opportunity for remote, multi-day float trips up to 8 days in length. The primary boating season extends from early May to mid-July, except during drought years when low water flows shorten the season. The difficulty of rapids ranges from Class I to Class IV and varies by river section and flow level. Powerboat use is regulated by river section and by season, with restrictions designed to provide a variety of boating opportunities throughout the river system as a whole, and to enhance the management goals for each river segment.

During boating season, BLM employees staff river launch points to encourage boaters to care for the river by practicing Leave No Trace outdoor skills and to respect private property rights. Regulations limit group size to 16 people, and the use of firepans and river toilets is required. No fires of any kind are allowed between June 1 and September 30. Self-issue permits, available at most river access points, are required year-round.

In 2004, the BLM's boater self-issue permit system recorded 16,192 boater use days between Service Creek and Clarno, of which 85% consisted of overnight trips. Boating use is increasing at an average of 3% each year, with the greatest increase occurring in river sections offering opportunities for shorter trips of one to three days in length. On peak weekends and holidays, the number of overnight boating groups exceeds the number of public land campsites located within a reasonable boating distance of major launch points. As use levels increase, competition for public land campsites increases, and boating groups who are unsuccessful at finding a public land campsite stop on private property to camp. The BLM administers 26 Special Recreation Permits which authorize commercial guides and outfitters to operate a business on the John Day River. In 2004, commercial boating use days between Service Creek and Clarno accounted for 10% of the total boating use days.

In 2008, the BLM completed a Limits of Acceptable Change (LAC) Study for boating use on Segments 2 and 3 of the John Day River. The study identified Desired Future Conditions (DFC) and standards for indicators that river managers monitor to determine whether DFCs for boating use are being met. The LAC Study made recommendations for the maximum number of groups that may launch on Segments 2 and 3 each day during peak use season. The study also recommended a limited-entry permit system to enforce these limits if monitoring showed that these targets for visitor use are being exceeded, but did not analyze alternatives for implementing such a system. The John Day River Plan decided that a limited-entry system would be implemented if the LAC study determined it was necessary. The John Day River Plan also established four conditions that were to be met prior to implementation of a common pool allocation on the John Day River. All four of these conditions related to



successful implementation of a common pool limited entry system on the Deschutes River have been successfully met. Monitoring has shown that between 1998 and 2008 the number of groups launching float trips each day on Segments 2 and 3 during the peak use season increased by almost 50%. Therefore, in mid-2009, the BLM initiated an Environmental Assessment process to analyze alternatives for implementing a limited-entry permit system on Segments 2 and 3.

## **Fishing**

Fishing is a popular recreation activity throughout Oregon and in the planning area. Fishing for bass, steelhead, and trout occurs on the main stem John Day River and on the North, Middle, and South Forks. To protect limited populations ODFW does not permit angling for bull trout and Chinook salmon on rivers and streams within the John Day Basin.

Steelhead fishing provides limited recreational opportunity in the John Day River and its tributaries as fish populations appear to be declining. Steelhead fishing generally occurs from November through January. Wild steelhead with unclipped adipose fins cannot be kept, however they can be caught if released unharmed. During most seasons some fin-clipped hatchery steelhead may be retained, however hatchery strays account for only 6-8% of the total steelhead population on the John Day River and its tributaries. The trout fishery has declined slightly from historic levels, but trout fishing continues to be a recreation opportunity enjoyed by visitors to the area.

Smallmouth bass fishing is growing in popularity and generally occurs from May to the end of October. The increase in popularity of bass fishing in the basin is due to word of mouth and media coverage in fishing publications. Consider the statement on flyfishusa.com, "In 1971, Seventy-five Smallmouth Bass were introduced to the river. Since then, they have flourished! The John Day River is arguably the best Smallmouth Bass water in the country."

## **Hunting**

Big game hunting is a major recreational activity and opportunities exist for hunting deer, antelope, elk, bighorn sheep, black bear and cougar. A limited number of antelope, and a very limited number of bighorn sheep tags are issued in the planning area. Local, statewide and out of state hunters come to hunt big game, and game birds. A variety of predators are also hunted, including coyotes, cougar, and bobcat.

Visitor use for hunting occurs during the summer, fall and early winter months and generally occurs on large tracts of BLM public land and on adjacent USFS lands. The planning area includes all of the Fossil, North side, Desolation, and Murderer's Creek hunting units and part of the Biggs, Heppner, Columbia Basin, Beulah, Ochoco, and Grizzly units. These units are established and regulated by the Oregon Department of Fish and Wildlife (ODFW). The ODFW establishes management objectives for each species within each hunting unit. The BLM issues special regulation permits in order to regulate commercial hunting on public lands.

About 5,000 deer and 2,700 elk were harvested by sport hunters within the John Day Basin in 2004. Information about hunting success is provided by management unit by ODFW. Consequently these numbers are approximate and do not indicate the ownership of the land on which the animals were taken.

Upland bird hunting occurs primarily during fall and early winter in shrub lands and riparian areas, with some bird seasons extending into March of the following year. Waterfowl hunting for duck and geese occurs in the fall and early winter on the John Day River and tributary rivers. The main stem of the John Day River is closed to waterfowl hunting downstream of Thirtymile Creek within the John Day Wildlife Refuge managed by Oregon Department of Fish and Wildlife.

Statewide the number of Oregon resident deer hunters has declined over the past 30 years, but sales of elk tags have remained relatively constant. In contrast the number of elk hunters from out-of-state has increased over this time period. However the sale of both resident and non-resident deer and elk tags is anticipated to decline over the next five years. Nevertheless, hunting for deer and elk is expected to remain a popular recreational activity in the planning area.



## General Non-motorized Recreation

Non-motorized recreation may include the use of a vehicle for transportation to and from a recreation site, but while at the site, the vehicle is not used. Motor vehicle use is neither the primary focus nor an integral part of a non-motorized recreation experience. Non-motorized recreationists often seek settings where the natural ambient background sounds of the setting are not affected by motor sounds.

Land-based non-motorized recreation activities in the planning area include picnicking, day hiking, backpacking, camping, mountain biking, bird watching, wildlife viewing, and other forms of nature study, nature photography, and berry and mushroom collecting. Although many hunters utilize OHVs, a significant number do not. Hunters who do not use OHVs in any way during their hunts, including retrieval of killed game, are defined as non-motorized recreationists.

Demand for non-motorized recreation (e.g., viewing and studying nature, photography, bird watching, and wildlife viewing) may gradually increase for activities popular with retiring “baby boomers.”

## Off-Road Motorized Recreation

For motorized recreationists, vehicle use is either the primary recreational activity or an integral part of it (e.g., OHV-based hunting). Off-road motorized vehicle use is allowed on the majority of BLM-managed lands in the planning area. However, on about 60 percent of these lands, restrictions limit the season of use or the routes open to motorized use, or both. Less than 15 percent of BLM managed lands are closed to all motorized use.

Off-highway (OHV) or all terrain (ATV) vehicles have one of three classifications:

- Class I: designed to travel on three or more tires, and is:
  - 50 inches wide or less;
  - 800 pounds or less dry weight ;
  - Saddle or seat
- Class II: Wider than 50 inches, or over 800 pounds dry weight
- Class III: Rides on two tires and is less than 600 pounds dry weight

People drive off road throughout the year, primarily for gaining access to other recreational activities such as hunting, looking for antler sheds, and fishing. Hunters use all-terrain vehicles (ATV refers to vehicles less than 50 inches wide) on BLM lands in late summer to scout for big game, in fall to hunt and retrieve big game, and in fall and winter to access upland bird hunting areas. Commercial antler hunters use ATVs in late winter and early spring to hunt for recently dropped deer and elk antlers. In addition, people drive off road for the pure fun of riding in some parts of the planning area. Off-road motorized use in the planning area is occurring in nearly every block of BLM-managed land that is accessible to the public or to adjacent landowners, even where current restrictions prohibit such use. This widespread use appears to be limited only where steep, impassable terrain makes off-road use unfeasible.

## Designated Route Systems

In a designated route system, all open routes open to travel are signed as designated routes. All routes not marked as designated routes are closed. Designated route systems are in place in all WSAs, on the west side of the John Day River north of Clarno, and in the Murderer’s Creek area along the South Fork John Day River. However, even with a designated route system, some users regularly drive past closed signs and off of designated routes.

## Lower John Day River

Though much of the BLM land adjacent to the lower John Day River is closed to off-road motorized vehicle use due to management guidelines for WSA and Wild and Scenic River, unauthorized use continues to occur. In addition, adjacent landowners and fee hunters from adjacent private lands operate OHVs on BLM lands not open to the general public.



## **Rudio Mountain**

Motorized use on Rudio Mountain occurs on old logging spur roads on all of these public lands. Primary use of OHVs is to support hunting with occasional sightseeing trips.

## **Upper John Day**

The Little Canyon Mountain project area includes 2,498 acres of public land designated as Open to motorized use. A 104-acre historic mining pit, once used for mining purposes, is currently used as a play area by trucks, ATVs, and motorcycles. The pit area also provides access to many user-created OHV routes in the area. An irrigation ditch runs through the pit and is often diverted by vehicle users to create a "mud-bogging" area. OHV users test their skills against steep and varied terrain in the area.

The Little Canyon Mountain area has a history of mining, and many vehicle routes are currently used to access mining claims. In addition to mining, the pit area has historically been used for dumping garbage, furniture, appliances, and old car bodies, in addition to target shooting. Recently, the pit area has been cleaned up and barriers have been constructed to prevent full size vehicles from entering the area and dumping trash. The BLM regularly receives complaints about motorized vehicle use in this area, especially regarding noise. Ambient background sound levels at the pit areas of Little Canyon Mountain include sounds from the nearby airport and from vehicles traveling on the adjacent highway.

Dixie Creek is another area receiving significant OHV use. Past mining and timber management activities have resulted in numerous routes on public lands in this area. A county road provides access to BLM lands, though scattered private lands are intermingled with BLM lands throughout this area. The BLM public land boundaries in this area are not marked, resulting in public land use mainly by local residents. ATV, motorcycle, and vehicle use in this area has resulted in new OHV trails being created. OHV use associated with mining also occurs in the Dixie Creek area.

## **North Fork John Day River**

In the past, roads were developed in this area where needed to harvest trees and manage cattle. These roads are generally located in river and creek bottoms, but some old routes skirt steep side hills.

Since the BLM acquisition of additional lands in this area, and the subsequent interim closure of most roads, there have been repeated violations of road closures. Trespass on private land also continues. These violations primarily occur during deer and elk hunting seasons.

## **OHV use on adjacent U.S. Forest Service Managed Lands**

The OHV use on adjacent U.S. Forest Service Umatilla, Wallowa-Whitman, and Malheur National Forests has also increased dramatically since the mid 1980s. OHV use on these forests has become a year-round recreation activity. According to the tri-forest Current Management Situation Report for the U.S. Forest Service Blue Mountain Plan revision (AMS), OHV use is associated with hunting prior to and during hunting seasons, with vacation and leisure-time use during summer months, and with local residents year-round.

## **OHV Use Trends**

The OHV use of BLM public lands within the planning area has dramatically increased since the Two Rivers, John Day and Baker RMPs were finalized in the 1980s. Increased OHV use on BLM public lands in the planning area has resulted from more recreation users coming to eastern Oregon to hunt, fish, camp, and ride OHVs for fun. These OHV users continue to create unauthorized trails on BLM managed land.

Nationally, annual sales of ATVs (four wheeled OHVs less than 50 inches wide) more than tripled between 1995 and 2003, to more than 1.1 million ATVs and motorcycles sold in 2003. Sales and participation in OHV recreation peaked and began to decline in 2003/4 after years of rapid increases, but OHV use remains very popular, especially in rural areas adjacent to public lands (Cordell *et al.* 2008). Demand for OHV access in the plan area will likely remain significant, at least in the near term and especially during hunting season. It is logical to assume that these trends are reflected in Oregon and increased OHV use in the John Day Basin is a consequence. ATVs continue to account for more than 70 percent of the OHV market. Cordell (2005) found that in the western region including



Oregon, the highest average OHV user days were attributed to the 51 and older age group. However, in just Oregon, the age group showing the greatest participation in OHV use was under age 30 at 25.3 percent.

The 2003 State Park Statewide Comprehensive Outdoor Recreation Planning (SCORP) survey for northeastern Oregon, which includes the JDBRMP area, found motorized activity increasing with almost all types of riders since 1987. Specifically, this survey found four-wheel use had increased 48 percent, OHV riding 47 percent, motorcycle use 73 percent, and snowmobiling 10.1 percent. These trends are valid for both BLM and U.S. Forest Service public lands since these riding opportunities are primarily on these public lands in this region.

In addition to the increase in the popularity of OHVs, the advancement of OHV technology has led to more user-friendly four-wheel drive vehicles which enable recreation users to go cross-country and cover broader ranges of terrain than before. Each year BLM receives complaints associated with motorized use, specifically vehicles in closed areas, trespass on private lands, wildlife disturbance, and soil and vegetation damage due to cross-country use over muddy terrain. Public lands in riparian areas are particularly susceptible to damage. For example, despite a motorized use closure, users enter the John Day River channel at Clarno, Cottonwood, and other locations during low water periods and drive in the channel for many miles to access the river canyon. Some OHV users drive into the John Day River riverbed at low flows to camp, leaving behind fire rings filled with trash that wash into the river when flows increase.

Conflicts continue to increase between public land users and adjacent private landowners who are concerned about trespass. Unauthorized OHV use is most frequent on BLM public lands in the North Fork John Day, Sutton Mountain/Pat's Cabin, and Spring Basin areas. Unauthorized OHV use also occurs on public lands where no public access is available, such as public lands on both sides of the John Day River from Kimberly to Tumwater Falls, Rudio Mountain, and public lands south and southwest of Kimberly. In addition, trespass is common during the fall hunting season in game units such as the Heppner unit, where OHV use on USFS and BLM roads and primitive routes has increased.

More user-developed trails on BLM public lands and also U.S. Forest Service designated Class I (ATV) and Class III (motorcycle) trails are available to ride than in past years. Despite this increased use, there are fewer BLM and U.S. Forest Service on-site law enforcement officers in popular OHV use areas to manage this use.

## Commercial Recreation

Some individuals do not have the knowledge, skill, equipment, or time to engage in and plan float, fishing, or hunting trips or any of a range of recreational activities that take place within the John Day Basin. As a result, guide, equipment rental, and shuttle operations have developed to serve this population. Currently, guiding and boat rentals involving the delivery and pick up of boats at BLM-managed sites are regulated by the BLM. The BLM issues Special Recreation Permits (SRPs) to authorize commercial use, competitive use, vending, special area use, and organized group activities or events on public lands and related waters. The SRPs enable the BLM to manage visitor use and protect natural and cultural resources.

Within the planning area, BLM currently administers 26 river-related SRPs authorizing boat rental, guiding, hunting, and fishing on specified sections of the John Day River. The activities and areas authorized vary by individual SRP. In addition, the BLM administers three upland SRPs for guided hunting during specific hunting seasons and in specified areas. The term of each SRP ranges from one to five years based on an annual evaluation of the lessee's performance.

Between 1996 and 2006, the number of commercial SRPs for the John Day River dropped from 34 to 26 due to non-renewal of an SRP by the permittee, or non-renewal by BLM due to failure to meet permit stipulations. Public demand for outfitter and guide services may be decreasing based on lower numbers of user days reported by guides and outfitters. Most permitted guides and outfitters depend on John Day River trips for only a portion of their income, supplementing it with other sources of income, including guiding and outfitting on other rivers or income derived from other businesses or employment.



The BLM has had a moratorium on issuing new commercial guide and outfitter permits for the John Day River since 1996. In 2001 the John Day River Plan required a needs assessment to identify a need for a particular river-related service before a new commercial guide or outfitter permit could be issued.

An estimated 15 vehicle shuttle services are used by John Day River boaters, and none are currently under BLM SRP because the services do not traverse more than one mile of BLM-managed land or water.

There have been no competitive event or vending SRPs issued within the planning area, although a John Day River Plan decision allows BLM to consider issuing vending permits at river launch points to benefit resource protection, such as for the sale of river toilets, firepans, or firewood. The BLM occasionally issues SRPs for organized group activities or events within the planning area.

In 2001, the Prineville District limited the availability of new SRPs for commercial, competitive, and organized group use on public lands within the district boundary. New SRP proposals will be considered for authorization for activities or events not exceeding seven consecutive days in length annually which do not require preparation of an environmental assessment. The BLM has received numerous requests for new river SRPs as well as new upland SRPs for guided hunting, nature hikes, and paleontological tours.

## **Access and Travel Management**

Primary ground transportation within the planning area is provided over a mix of federal, state, and county roads and highways. Except for the extreme northern portions of the planning area, most of the John Day Basin is connected by basically rural roads. While the surface of the federal highways and many of the state and county routes are generally in good condition, these roads cross difficult terrain and wind around and over rivers, streams, canyons, rimrock, and mountains.

### **Federal Interstate, State Highways, and County Roads**

The BLM-managed lands are accessible from federal interstate, state highways, county roads, local roads and private residences. Widespread access to BLM-managed public lands provides opportunities for range, timber, and mineral use; a variety of recreation opportunities; and access to different land ownerships. Local communities are connected by a road system that traverses and meanders through the Eastern Oregon landscape.

Interstate 84 parallels part of the northern end of the planning boundary along the Columbia River. This interstate is a major route used by travelers and commercial trucks between the western and eastern portions of the country. Recreationists and other public land users from the Portland and Seattle areas also use this interstate highway in their trek to public lands in the planning area.

U.S. Highway 26 is a major travel corridor through the heart of the planning area and extends in an east-west direction. U.S. Highway 395 bisects the eastern part of the planning area from North to South. U.S. Highway 97 extends in a north-south direction from Madras to Biggs and forms part of the western planning area boundary.

In addition to the above routes, state highways and county roads provide access within the planning area. These state highways and county roads connect local communities and ranches to the John Day River, BLM, Forest Service, and National Park lands. These routes also provide for travel within Eastern Oregon and to adjacent states. Table 3-25 summarizes interstate, U.S., and state highway mileage within the planning area by county. Although state and many county roads are paved, these roads are crooked and traverse hilly topography, increasing travel time between communities. During winter months travel between communities requires longer driving times and is frequently hazardous. In addition, limited county road funding restricts road maintenance, road re-construction, sign and ditch maintenance, and snow plowing. Table 3-26 identifies mileage of county road types within the planning area, which shows a predominance of gravel, cinder or primitive roads maintained by counties within the planning area.



**Table 3-25. Summary of U.S. and State Highway Mileage Within the Planning Area.**

County	Interstate, U.S. or State Highway	Miles
Baker	<b>County Total:</b>	<b>0</b>
Gilliam	I-84	51.53
	SR 19	52.99
	SR 206	39.35
	SR 74	8.05
	<b>County Total:</b>	<b>151.92</b>
Grant	U.S. 395	80.25
	U.S. 26	76.55
	SR 402	34.85
	SR 19	19.01
	SR 7	7.48
	<b>County Total:</b>	<b>218.14</b>
Jefferson	<b>County Total:</b>	<b>0</b>
Morrow	SR 207	0.06
	<b>County Total:</b>	<b>0.06</b>
Sherman	U.S. 97	47.80
	SR 206	16.06
	I - 84	10.06
	SR 216	0.50
	<b>County Total:</b>	<b>74.42</b>
Umatilla	U.S. 395	2.70
	<b>County Total:</b>	<b>2.70</b>
Wasco	SR 218	13.35
	U.S. 97	3.17
	<b>County Total:</b>	<b>16.52</b>
Wheeler	SR 19	50.13
	U.S. 26	45.88
	SR 207	39.79
	SR 218	19.24
	<b>County Total</b>	<b>155.04</b>
<b>Grand Total:</b>		<b>618.80</b>

Source: BLM GIS road database, 2006

## Roads Across BLM Lands

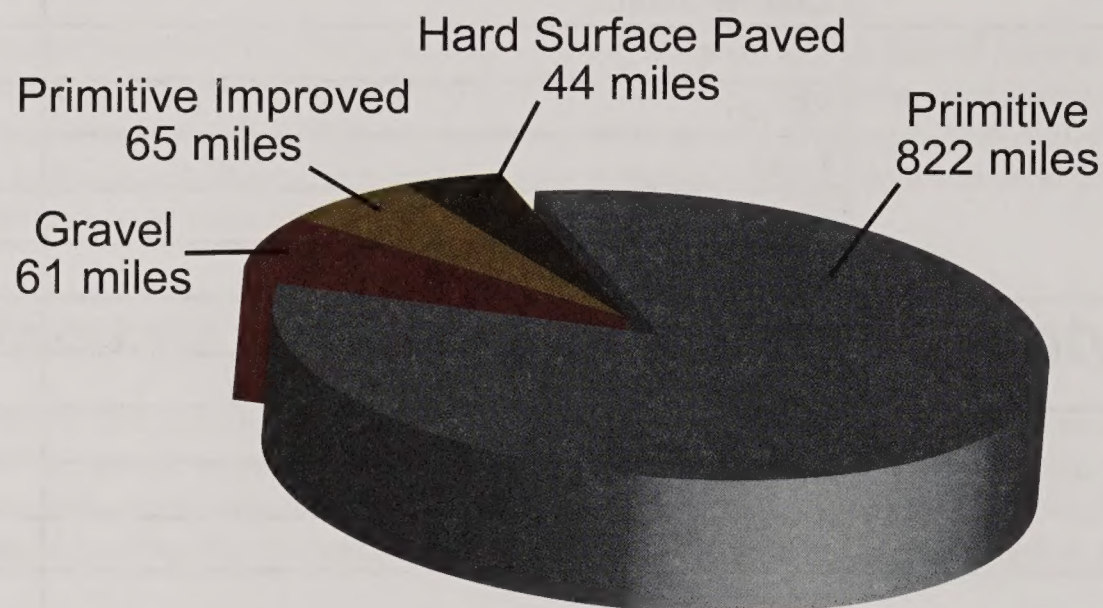
Within the planning area, a wide variety of road types are located on BLM public lands. Not all are maintained by BLM. Many of these roads are maintained and managed by entities such as the Oregon Department of Transportation, county road departments, utility companies, and other right-of-way holders, including private landowners. These various road types are illustrated in Figure 3-34.



**Table 3-26. County Transportation System in the John Day Basin RMP Area.**

County	Paved Road	Gravel, Cinder Primitive Surface Road	Total Miles
Baker	0	0	0
Gilliam	21	429	450
Grant	215	353	568
Jefferson	0	60	60
Morrow	0	0.9	0.9
Sherman	86	190	276
Umatilla	0	0	0
Wasco	0	22	22
Wheeler	36	335	371
Total	358	1,390	1,748

Estimated County road mileage from BLM GIS road database; 2006

**Figure 3-34. Miles of Road on BLM Land by Surface Type.**

## BLM Transportation System

There are three classes of routes in the BLM transportation system: roads, primitive roads, and trails. A road is a linear route declared a road by the owner, managed for use by low-clearance vehicles having four or more wheels, and maintained for regular and continuous use. A primitive road is a route managed for use by four-wheel drive or high clearance vehicles. These routes do not normally meet any BLM road design standards. A trail is a route managed for human-powered, stock, or off-highway vehicle forms of transportation or for historical or heritage values.

The existing primitive road and trail network in the planning area is a combination of historic county roads, BLM maintained roads, roads once constructed that are maintained only by the passage of users, and trails created by a variety of users. Existing routes have been constructed in the past for livestock or timber management, mining, and travel between cities and ranches. Many of these roads were created several decades ago and continue to be used, while others are no longer usable by motorized users. Approximately 250 miles of these roads are not accessible to the general public because they are connected to private roads (without public easements) across private lands. No standard exists for the retirement or obliteration of roads after they have served their functional purpose.



Recreationists, private landowners, and permittees use authorized and unauthorized primitive roads and trails to reach destinations throughout the John Day Basin area. The BLM maintenance of primitive roads is done primarily on an "as-needed" basis. Unauthorized use on existing routes and cross-country motorized use has continued to increase annually. These actions continue to result in road rutting, soil compaction, increased muddy water runoff, disturbance to wildlife and trespass on private lands.

## **BLM Roads**

### **Lower John Day River**

Though considered part of the Lower John Day, existing roads in the area immediately north of Clarno are displayed in Chapter 2 on the Map 12B Sutton Mountain Travel Management. From Clarno, approximately four miles of BLM unmaintained primitive road extends north to a locked gate just beyond the Sorefoot Creek drainage. There are no other BLM-managed roads across BLM lands in the Lower John Day Area (see Chapter 2, Map 12A: Lower John Day Travel Management and Map 12B: Sutton Mountain Travel Management).

### **Sutton Mountain Area**

In the Sutton Mountain area, several small portions of BLM-maintained roads exist. North of Mitchell, an old logging road extends east to west from Highway 207 to Bridge Creek Road. This road is called the Old Logging Road (BLM road 7548) and is a BLM maintained gravel road. The Priest Hole Road (BLM road 7559) is a BLM maintained natural surface road which extends from Bridge Creek Road down to the John Day River and then east to the Twickenham-Bridge Creek-Cutoff County Road (see Map 12B: Sutton Mountain Transportation in Chapter 2).

### **Rudio Mountain and Johnson Heights Areas**

Along the Franks Creek Road (BLM road 6203), BLM has a reciprocal agreement with an adjacent landowner that specifies that whoever uses this 9.5 mile road segment maintains it. BLM maintains approximately 7 miles of the Timber Basin Road, which is open for BLM administrative and public use. Holmes Creek Road is maintained by BLM and extends south for approximately 8 miles until public access ends at private land, just north of the Cant Ranch. The very rough, primitive, and unmaintained Squaw Creek Road extends approximately 8 miles until private lands prevent further public access (see Chapter 2, Map 12C: Rudio Mountain/Johnson Heights Transportation).

### **South Fork John Day River**

The BLM maintains approximately 23 miles of gravel road on the South Fork John Day River. This road is maintained on an annual basis whereas all other BLM road maintenance in the planning area is done on an as-needed basis. Grant County Road Department maintains approximately 1.5 miles of paved road and 7.5 miles of gravel road along this river.

Other routes off the South Fork John Day River Road are open seasonally. Jackass Creek and Murderer's Creek roads are limited to designated routes and open seasonally. This area is managed as a Cooperative Travel Management Area by the BLM, USFS, and ODFW.

Two other areas in the South Fork John Day area are open seasonally: Battle Creek Road extends south of Highway 26 and Indian Creek road is open seasonally (see Chapter 2, Map 12D: South Fork John Day River Transportation).

Indian Creek and Deer Creek roads provide access ties between the South Fork John Day River and Malheur National Forest lands, while Sunflower Creek Road provides a tie to the Ochoco National Forest lands.

## **Access and Travel Management**

### **Upper John Day**

There are 17 miles of undesignated roads on very steep terrain through public lands in the Little Canyon Mountain area. Many routes have no drainage built into them and rut easily due to high clay content. Many



of these routes are used recreationally by OHV enthusiasts. Some routes provide access to mining claims (see Chapter 2, Map 12E: Upper John Day Transportation).

North of Prairie City along County Road 58, an undesignated road extends to the Malheur National Forest Boundary along Dixie Creek. This road is not maintained by the BLM but provides public access to the Malheur National Forest in this area.

## **North Fork John Day River Roads**

The North Fork John Day River Access Road (BLM road 7569) is a BLM maintained road following the North Fork John Day River from its intersection with Highway 395 downstream to about 2 miles east of the junction with Wrightman Canyon Road (County Road 15). Though there is no formal easement, the private landowner has not prevented public travel on the road through his property.

A road exists downriver from the Wrightman Canyon Road to the Wall Creek Road (County Road 31). This primitive, unmaintained road parallels the north and west banks of the North Fork John Day River. There are 7.15 miles of road on BLM public lands and 7.85 miles of road on private land. No public easements exist through the private lands, and no easements have ever been pursued or obtained by BLM or any other public agency. Private landowners have placed gates across this road in the early 1990s and in 2005. These gates have frequently been pulled out by users.

Two primitive, seasonally open roads lead to the north from the North Fork John Day River Access Road. The first, up Jericho Creek, has a small spur road but in either direction the road soon ends. Near the end of public access on the North Fork road the Mallory Creek Road extends into the Umatilla National Forest. Maintenance on primitive roads is typically performed on an as needed basis to protect adjacent natural resources. The level and frequency of maintenance performed will vary based on individual site (road) conditions. In many instances minor maintenance, such as removing fallen trees from across the road surface, is performed by users with or without the BLM's knowledge. There has been no formal BLM maintenance on these roads to date. Several primitive roads that are open seasonally extend from the Umatilla National Forest BLM managed lands. Each of these routes ends near the top of rimrock overlooking the North Fork John Day River several hundred feet below.

Public access along the North Fork is available north of the city of Monument for 7.6 miles along County Road 31, to Wall Creek. This county road extends north, past Wall Creek, to BLM and Forest Service lands. At this point several primitive BLM roads are open seasonally from April 16 to November 30 (see Chapter 2, Map 12F: North Fork John Day Transportation).

## **BLM Road Traffic Trends**

Patterns of use on BLM-managed roads within the planning area have not been systematically studied. It appears that OHV use on BLM roads, primitive roads and trails continues to increase throughout the planning area, especially during deer and elk hunting seasons. BLM public lands tend to be more popular and receive more OHV use, since OHV access is restricted on Forest Service lands adjacent to the planning area. The OHV section in this chapter describes user-created trails and OHV user trends in more detail.

## **Recreation Access Trends**

Private roads that were once open to the public are often no longer available for access to public land as private landowners place gates across these private roads. Recreational use of public lands has joined grazing and timber management as a primary use. Limitations on public access to scattered public lands and a transportation system that does not accommodate changing user needs has contributed to resource damage and increased the incidence of trespass on private lands.

Reduction in access has occurred as roads across private lands are decommissioned and open roads are not repaired. The location and distribution of scattered BLM lands require public land users to become familiar with adjacent private ownership patterns and routes open for public use. The fact that some BLM lands are isolated from public access has also led to trespass. Patterns of land ownership can be confusing and lead to inadvertent



and sometimes intentional trespass on privately owned lands. The Johnson Heights area accessed by Squaw Creek Road experiences some of the most persistent hunter-landowner conflicts in the planning area. The many isolated BLM parcels in this area are coveted by hunters, and some attempt to cross private lands at the end of public access in order to reach these lands.

Some ranches that in the past afforded their neighbors access to BLM-managed lands have been divided or bought by "outsiders" who often manage for fee hunting. These changes in land ownership exacerbate the already limited access. This represents a change in landowner mindset, since they have historically allowed the public to drive on private roads to reach public lands.

While the public at large may be excluded from enjoying BLM-managed lands surrounded by private lands, the private landowners and their guests frequently use OHVs to access public land for deer, elk, sheep and upland bird hunting.

Similarly, commercial hunting guides pay a fee to gain access to public lands through private property. Some motorized users have attempted to access public lands through private property with and without landowner permission.

Motorized use is no longer available to the public in the Spring Basin Wilderness. In past years, motorized use occurred on approximately nine miles of undeveloped vehicle routes in this area. This access requires crossing a 40-acre parcel of private land that has been closed to the public by the landowner.

## Energy and Mineral Resources

Much of the early history of the North, Middle, and Upper John Day basins involves the search for the "motherlode." For a few the search continues even today.

Early westward immigration to the planning area was in large part sparked and sustained by metallic lode and placer ore deposits found along the so called 50 to 100 mile wide Blue Mountain Gold Belt stretching from John Day eastward to the Snake River. Oregon's "golden years" began in the late 1800s and peaked several times before declining drastically in the mid-1960s. The new "hot" commodities are direct use geothermal heat and wind energy potential, primarily on ridge lines. There is also a growing speculative interest in possible natural gas deposits trapped beneath capping Columbia River basalts.

The quarrying of mineral material for construction purposes remains an important activity in the John Day Basin. Common material (such as sand, gravel, and aggregate) literally form the foundation of community and regional infrastructure. Modern roads and building foundations would not be possible without these common materials.

The BLM currently manages 2.7 million acres of subsurface minerals in the plan area. Eighty-three percent of these mineral rights are overlain by land managed by state and federal agencies and the remainder is managed by private landowners. The BLM categorizes minerals as locatable, leasable, or salable. Locatable minerals are minerals for which mining claims can be located under the 1872 mining laws, as amended. These include precious and base metals and some non-metallic minerals. Salable minerals include common variety mineral materials such as sand, gravel, rock, and cinders. Leasable minerals include oil, gas, and geothermal and some solid mineral resources such as coal and oil shale. The distribution of mineral resources is described below.

### Locatable Minerals

The potential for the occurrence of locatable minerals in the central and northern parts of the planning area is generally low because of the prevalence of relatively recent non-mineralized Columbia River Basalt flows in the Columbia Plateau Ecoregion and the northern portion of the Blue Mountain Ecoregion. The southern and eastern parts of the planning area generally have a moderate to high potential for locatable minerals due to scattered pockets of mineralization in the John Day and Clarno formations and in the accreted terrane rocks.



Lode and placer deposits containing gold and silver are present in the southern and eastern part of the planning area around Clarno, Antone, John Day, Canyon City, Prairie City, Granite, and in the Greenhorn Mountains. Like most gold deposits, the gold found in the area is a naturally occurring alloy with silver (Lindgren 1901). As a result, silver was produced as a byproduct of gold mining. Silver was also produced from ores including tetrahedrite, stephanite, pyrargyrite, and copper ores.

Ores of copper are found in the Ashwood, Spanish Gulch, Canyon, Greenhorn, Susanville, Granite, and Quartzburg Mining Districts (Brooks and Ramp 1968). The copper ores are present in the same veins that were mined for gold and silver.

Copper deposits are also found on the Strawberry Range crest between the summit of Canyon Mountain and Indian Creek Butte; a few other deposits occur just outside the western boundary of the Strawberry Mountain Wilderness (Thayer *et al.* 1981). Chalcopyrite, malachite, and chrysocolla are the primary copper-bearing minerals and occur mainly in lenticular quartz veins placed in gabbro host rock. All known copper deposits in the area are either too small or have an insufficient grade for production under current economic conditions. Occurrences of galena (ore of lead) are similar to that of copper in the planning area mining districts.

Deposits of chromite (ore of chromium) are located in the southeast part of the planning area in Grant County. Most of these deposits are in the Strawberry Range though a few also occur in the Greenhorn Mountains. Individual chromite deposits, ranging from a few hundred kilograms to 115,000 tons, occur as pods and lenses in peridotite, dunite, and serpentinite (Thayer 1940; Thayer *et al.* 1981). At least 100 chromite deposits are recognized but most occurrences contain less than 100 tons.

Cinnabar (ore of mercury) was discovered in eastern Jefferson County in 1933. Small, isolated cinnabar deposits occur on the east and west sides of Canyon Creek in the southern part of the planning area. A notable mercury deposit was discovered in 1963 near the confluence of the East Fork of Canyon Creek and Canyon Creek (Thayer *et al.* 1981) where cinnabar occurs as fracture fillings and replacements in greywacke host rock. Cinnabar is also present in the Greenhorn Mining District (Brooks and Ramp 1968).

Bentonite clay is another locatable mineral found within the planning area. Active mining claims are located in the area about 1.5 miles northwest of Clarno.

Other locatable minerals occur in the planning area. Deposits of chrysotile asbestos, nickel, and platinum-group metals (platinum, palladium, and rhodium) are found in the Strawberry Range and surrounding areas (Thayer *et al.* 1981). Zinc, lead, iron, arsenic, antimony, cobalt, bismuth, molybdenum, and manganese are all present in one or more of the mining districts in the planning area (Brooks and Ramp 1968). Like copper and lead, these minerals are present in the same veins that contain gold and silver. Thus, minor amounts of these metals were produced from the gold and silver mines.

## Mining Activity

Presently, there are 80 active mining claims within the planning area. Map 21 displays locatable mineral potential within the planning area.

### Gold

The Canyon Mining District includes the area surrounding John Day and Canyon City. Notable placer deposits were mined in the John Day River and in Canyon Creek. Lode deposits in quartz veins were mined on Little Canyon Mountain and on Miller Mountain. Between the discovery in Canyon Creek in 1862 and 1908, an estimated 600,000 ounces of gold were produced from the Canyon Mining District (Thayer *et al.* 1981). Dredges in Canyon Creek and the John Day River produced 124,000 and 13,000 ounces of gold and silver, respectively, from 1916 to 1942 (Brooks and Ramp 1968; Thayer *et al.*, 1981). Relatively small amounts of gold have been produced from the Canyon Mining District since the last dredge was dismantled in 1942.



The Quartzburg Mining District includes Prairie City and the Dixie Creek drainage basin. Placer deposits are found both in Dixie Creek and the John Day River and six lode mines were also worked in the area. Reliable production figures prior to 1930 are not available. Dredges in Dixie Creek and the John Day River produced more than 22,500 ounces of gold from 1930 to 1941 (Brooks and Ramp 1968).

The Spanish Gulch Mining District is relatively small and is located near Antone in southwest Wheeler County. Mining in the district began in 1864 (Willingham 1982). Placer deposits in Rock and Birch Creeks were worked and some quartz veins were mined (Brooks and Ramp 1968). According to Collier (1914), at least 5,000 ounces of gold were produced from the placer mining. This district has been designated as the Spanish Gulch ACEC for the historic mining structures that remain (USDI BLM 1986), though mining no longer occurs there.

Other productive areas included the Granite, Greenhorn, and Susanville Mining Districts (Brooks and Ramp 1968). All of these districts are located in northeastern Grant County.

Mining claims are still held in many of the historical mining districts, though most operations are small-scale (casual use). Present operations mainly involve small adits (horizontal or nearly horizontal mine entry dug into slope) and reworking of tailings left by the larger operations of the past.

## Copper

In the Granite District, the Cougar, Independence, and La Bellevue mines collectively produced 16,275 pounds of copper (Brooks and Ramp 1968). Another notable producer of copper was the Standard Mine in the Quartzburg District. A total of 57 tons of ore containing 20% copper were mined and smelted (Brooks and Ramp 1968). Copper ore was also produced from other mines in other mining districts but reliable production figures are unavailable.

All known copper deposits in the area are either too small or have an insufficient grade for production under current economic conditions.

## Lead

The only notable recorded lead production was from the Cougar, Independence, and La Bellevue mines in the Granite District; 34,598 pounds of lead were produced (Brooks and Ramp 1968). Some lead was probably produced from the sulfide ores of other mines in other mining districts, but reliable production figures are not available.

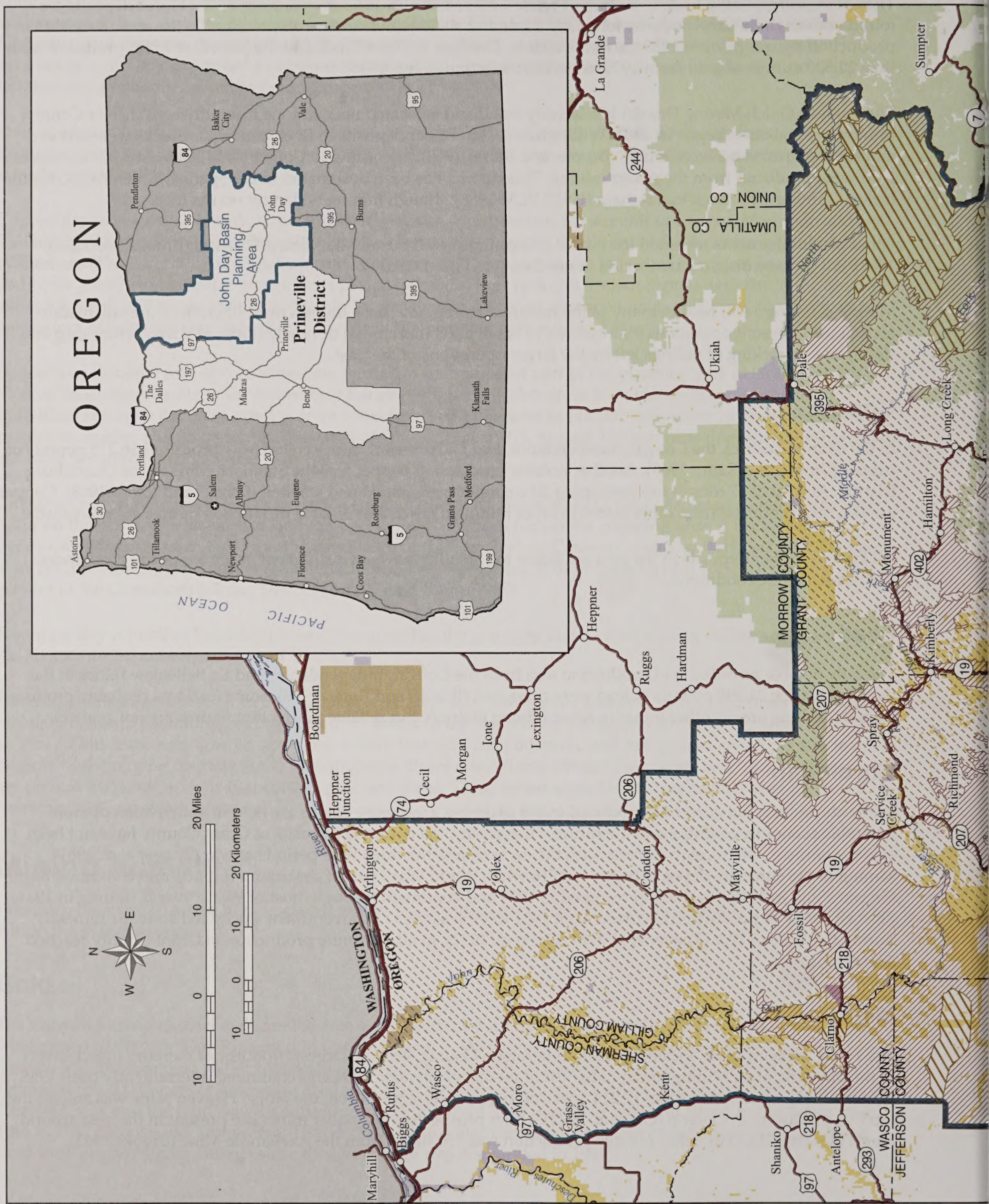
## Chromium

While chromite is not currently produced in the planning area, some claims are held in anticipation of more favorable economic conditions in the future. Historically, the chromite deposits of Grant County have not been able to compete with foreign sources with the exception of the three time periods of war (Thayer *et al.* 1981). Mining of the chromite deposits began in 1916 when World War I cut off chromium imports and continued until the war's end in 1918. Production resumed in 1939 and continued through most of World War II, ending in 1944. The last phase of production occurred from 1951 to 1958 as the U.S. government stockpiled strategic minerals during the Korean War (Thayer *et al.* 1981; Orr *et al.* 1992). In all, chromite production in Grant County reached 30,000 tons.

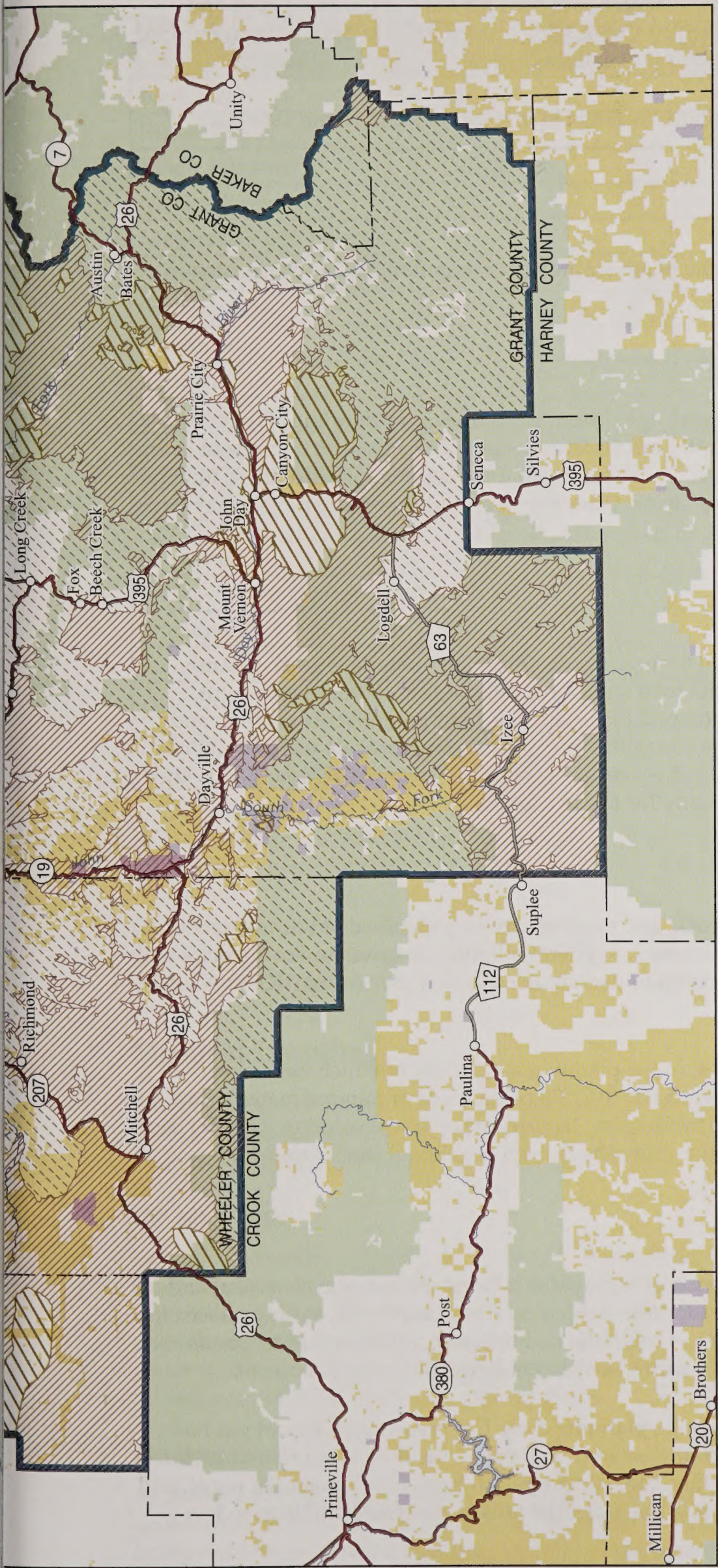
## Mercury

The Horse Heaven Mine, located in eastern Jefferson County, was the largest producer of mercury (quicksilver) in the planning area. Mining for cinnabar (or of mercury) began in 1934 and continued intermittently until 1958 (Brooks 1963). During this time, 17,214 flasks of mercury were produced; the Horse Heaven Mine was among the top five producers in Oregon (Orr *et al.* 1992). Other prospects and smaller mines are present in the area around Horse Heaven. The only other notable production was 150 flasks from the Axehandle Mine (Brooks 1963).





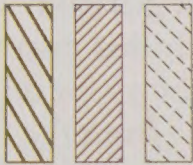




Map 21: Locatable Mineral Potential

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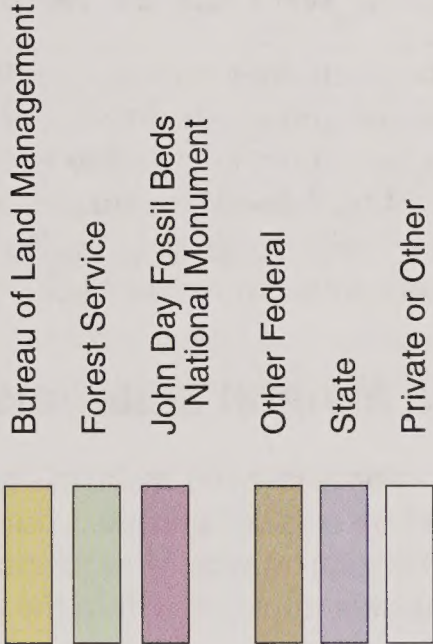
Locatable



Planning Area Boundary



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2012

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Map 21: Locatable Mineral Potential



A notable mercury deposit was discovered in 1963 near the confluence of the East Fork of Canyon Creek and Canyon Creek (Thayer *et al.* 1981). Production from the Canyon Creek Mine totaled 3,830 kilograms between 1963 and 1968. Currently, mercury is not being mined anywhere in the planning area.

Cinnabar is also present in the Diadem Mine in the Greenhorn Mining District (Brooks and Ramp 1968). No production records are available.

## **Bentonite**

Bentonite clay is another locatable mineral found within the planning area. Active mining claims are located in the area about 1.5 miles northwest of Clarno.

## **Other Minerals**

Deposits of chrysotile asbestos, nickel, platinum-group metals (platinum, palladium, and rhodium) (Thayer *et al.* 1981), zinc, tungsten, iron, arsenic, antimony, cobalt, bismuth, molybdenum, and manganese are all present in one or more of the mining districts in the planning area (Brooks and Ramp 1968). Like copper and lead, these minerals are present in the same veins that were mined for gold and silver. Thus, minor amounts of these metals may have been produced from the gold and silver mines.

## **Salable Mineral Materials**

Most of the planning area has a moderate to high potential for occurrence of mineral materials, such as sand, gravel, barrow and crushed rock. All maintained roads, sidewalks, airports, buildings and other permanent structures would not be possible without these common mineral materials. The high potential areas are in and around existing mineral material quarries and in rock deposits with known value for aggregate uses. Most of the high potential areas occur in alluvial deposits of sand and gravel, the Columbia River Basalt flows, and other volcanic rock units known or likely to have a sufficient quality for use in asphalt.

## **Salable Mineral Materials Uses**

Common variety mineral materials such as sand, gravel, rock, and cinders may be purchased at fair market value or acquired by free use permits from the BLM. Free use permits are generally limited to government agencies and non-profit organizations. Mineral materials may also be mined under a material site right-of-way (ROW). Map 22 displays salable minerals within the planning area.

Currently, there are several mineral material sites (quarries) in the planning area, some of which have never been developed. Over the next 10 to 20 years, approximately 5,000 to 7,500 cubic yards of mineral materials are expected to be mined annually, mostly by Grant County. The Oregon Department of Transportation (ODOT) has several existing material site rights-of-way; only a few of these sites have been developed (see Table 3-27).

## **Leasable Minerals**

Leasable mineral resources include oil, gas, and geothermal and some solid mineral resources such as coal and oil shale. Occurrences of low-grade coal are found at various locations extending from near Fossil, south and east to the community of John Day. Economic quality or quantities of coal, coal bed methane, oil shale and tar sands are considered to be absent from the planning area and are not addressed further in the planning document.

The potential for oil and gas ranges from low to high across the planning area. The presence of oil and gas has occurred in exploratory wells drilled near the northeast-southwest trending axis of the Blue Mountains anticline. This fold represents a potential trap for oil and gas and is therefore considered to have a high potential for oil and gas accumulation. Farther away from the fold axis, the oil and gas potential falls to moderate and then to low.

The potential for the occurrence of geothermal energy is moderate to high across the planning area.



**Table 3-27. Mineral Material Sites in the Planning Area.**

Site Name	Site Number	Owner/Operator	Instrument
Big Creek	OR-037135	BLM-Grant County	Community Pit
Bridge Creek	N/A	BLM	Unknown
Magic Lantern	OR-037134	BLM	
Meyers Canyon	N/A	BLM	Unknown
Meyers Canyon Hwy 207	N/A	BLM	Unknown
Monument Pit	OR-58539	BLM-Grant County	Free Use Permit
Smokey Creek	OR-036867	BLM	Common Use Area
Unnamed	OR-02126	BLM-ODOT	Material Site ROW
Unnamed	TD-029897	BLM-ODOT	Material Site ROW
Unnamed	TD-030633	BLM-ODOT	Material Site ROW
Unnamed	TD-030637	BLM-ODOT	Material Site ROW
Unnamed	TD-031358	BLM-ODOT	Material Site ROW
Unnamed	TD-031780	BLM-ODOT	Material Site ROW
Unnamed	TD-031811	BLM-ODOT	Material Site ROW
Willow Creek Quarry	OR-013350	BLM-ODOT	Material Site ROW
Unnamed	TD-31692	BLM-ODOT	Material Site ROW
Unnamed	TD-030912	BLM-ODOT	Material Site ROW
Ajax Quarry	OR-01795	BLM-ODOT	Material Site ROW
Unnamed	OR-01953/OR-02079	BLM-ODOT	Material Site ROW
Hoogie Doogie Mountain	OR-06135	BLM-ODOT	Material Site ROW

Hot springs are scattered throughout the southeast part of the planning area. Each hot spring is a surface indication of geothermal energy. All but two of the hot springs have temperatures exceeding 40°C (104°F).

Geothermal exploratory wells are somewhat evenly distributed across the planning area. Temperatures encountered in the wells range from 20°C (68°F) to 45°C (11°F). Only four of these wells have temperatures exceeding 30°C (86°F); all of the other wells have temperatures of 23°C (73°F) or less.

## Mineral Leasing

Fluid mineral resources including oil, gas, and geothermal and some solid mineral resources such as coal and oil shale are obtained from BLM-administered lands by leasing. Presently, no areas within the planning area are leased and no exploration is occurring. This situation could change as technology improves or if energy prices rise notably.

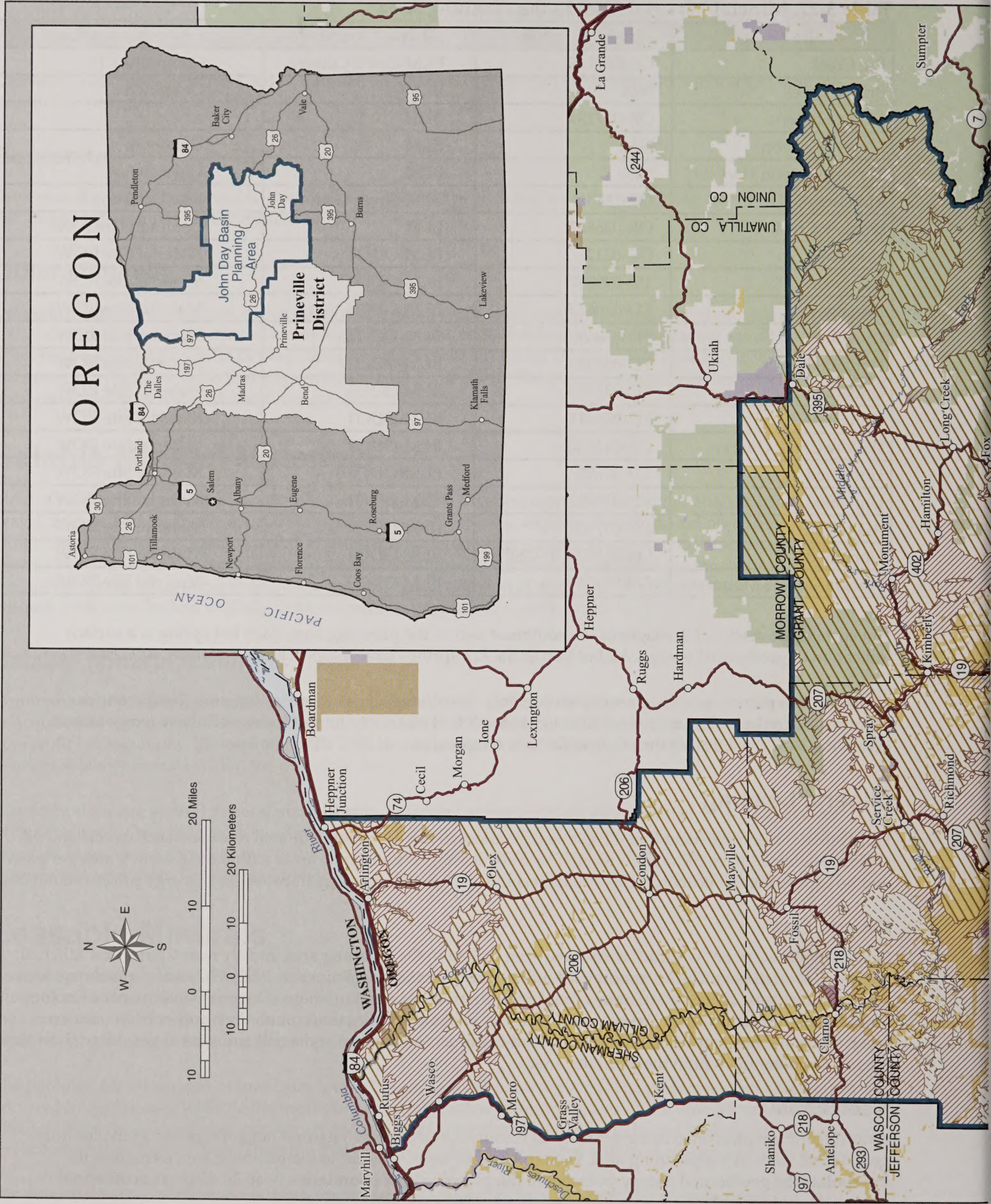
## Oil and Gas

Several exploratory or "wildcat" wells have been drilled in the planning area, mostly near Clarno and Mitchell. One well, located near Clarno, produced 4 million cubic feet of gas (Tennyson 1995). Oil and/or gas shows were reported in at least 12 wells, but none represented commercial accumulations (Oregon Department of Geology and Mineral Industries 1989; Tennyson 1995). Other evidence of oil/gas accumulations comes from numerous water wells that have encountered asphalt-filled fractures and cavities and small amounts of gas. Map 23 displays oil and gas potential within the planning area.

## Geothermal

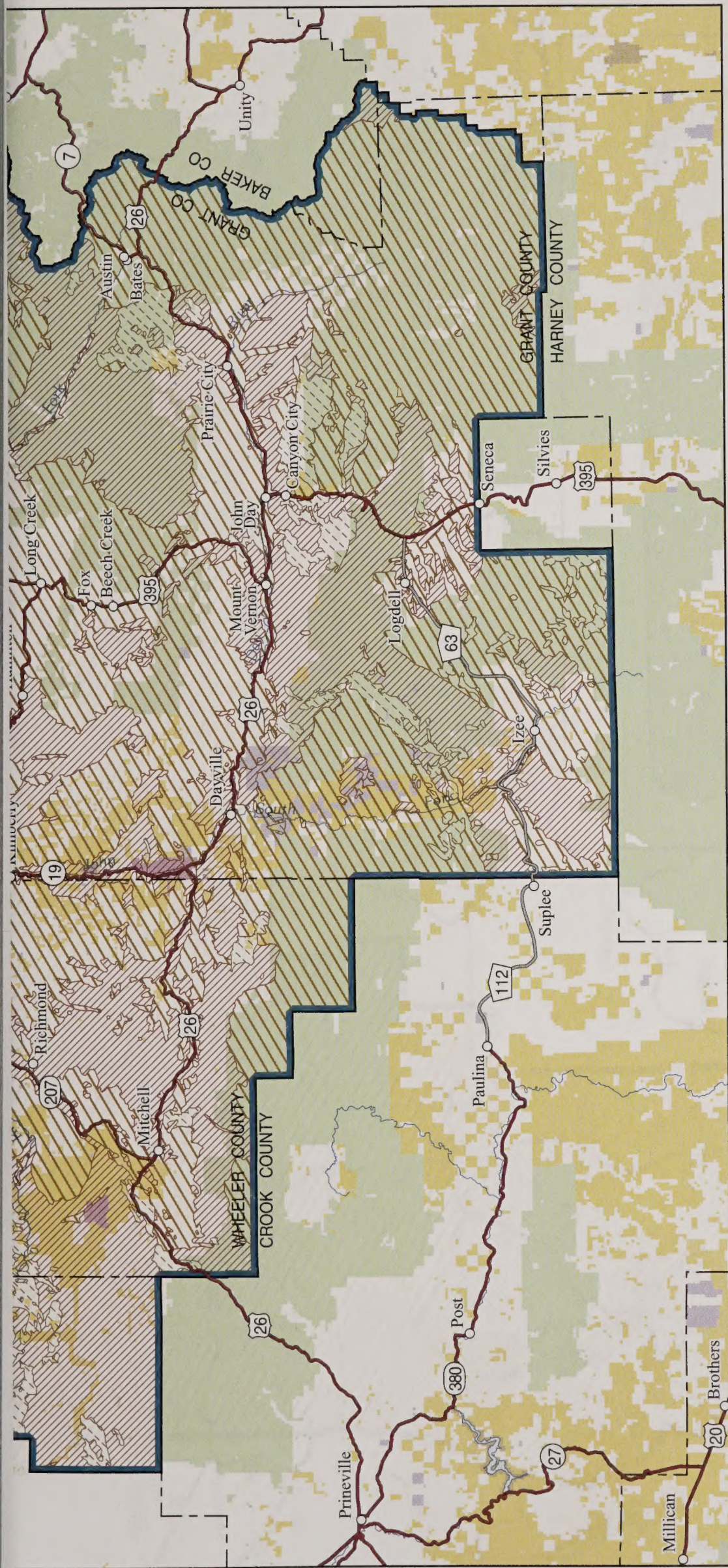
Available information on existing geothermal resources comes from 8 natural hot springs and 18 exploratory geothermal wells in the planning area. Data from other wells adjacent to the planning area were used to interpolate the geothermal energy potential to the planning area boundaries. Map 24 displays geothermal potential within the planning area.







Map 22: Salable Mineral Potential

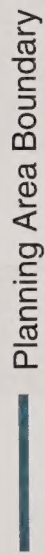


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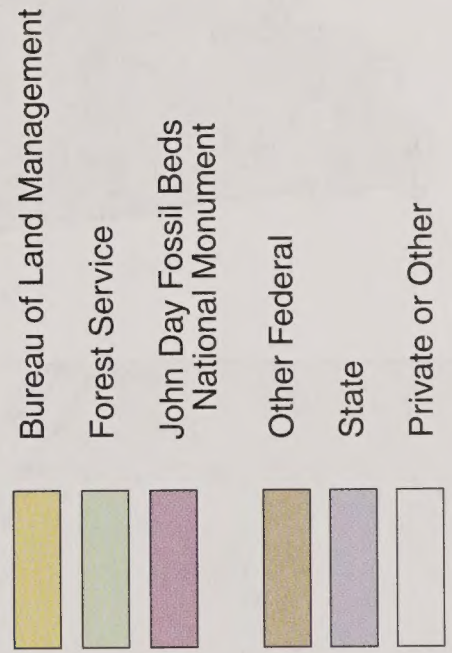
### Mineral Source Pit



### Planning Area Boundary



### Administered Land



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2012

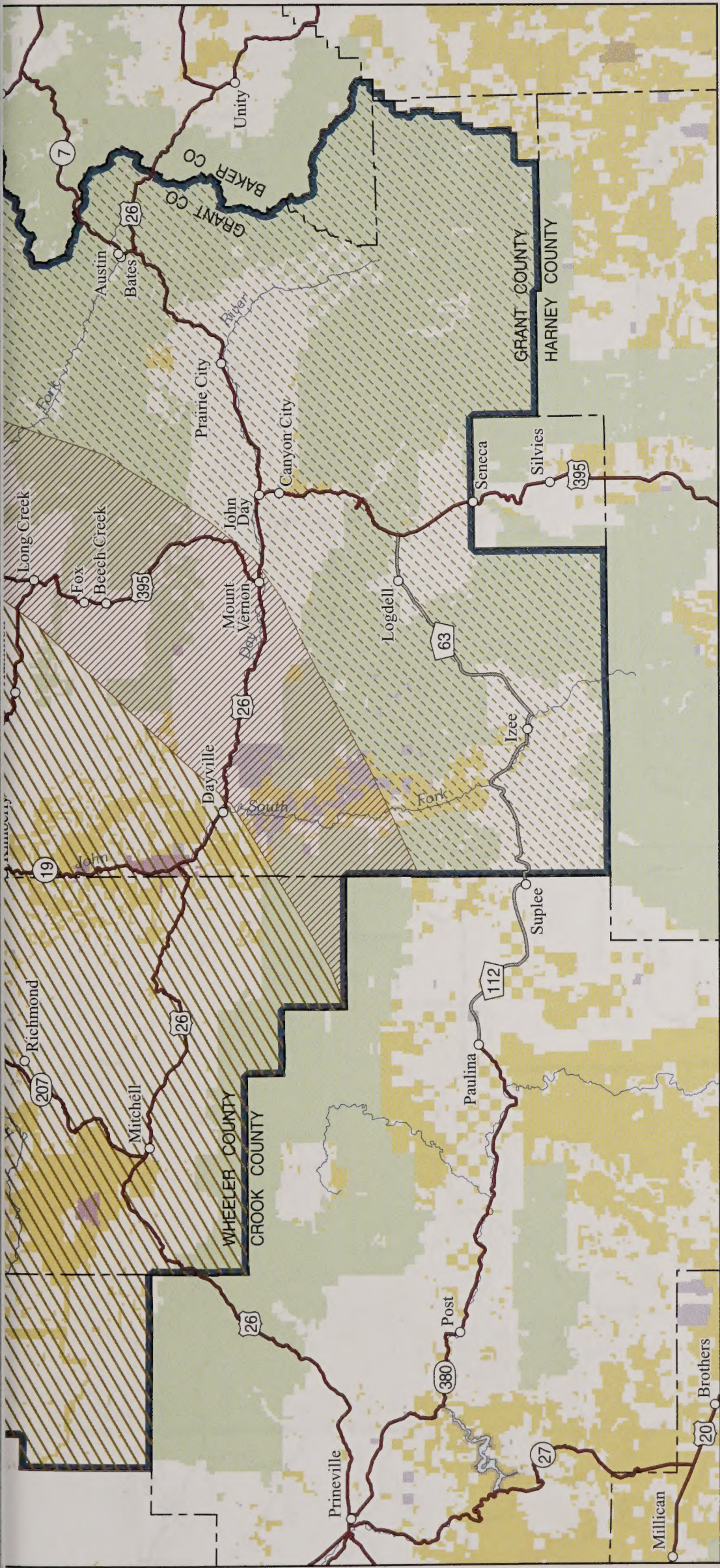
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Map 22: Salable Mineral Potential



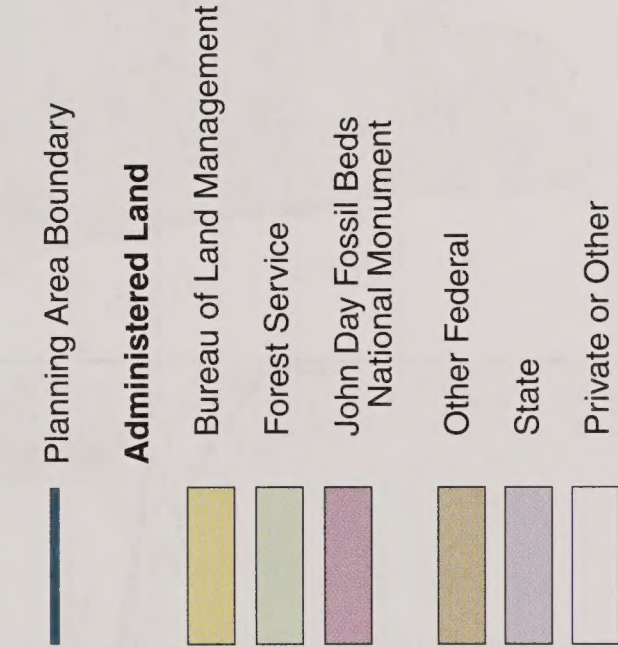
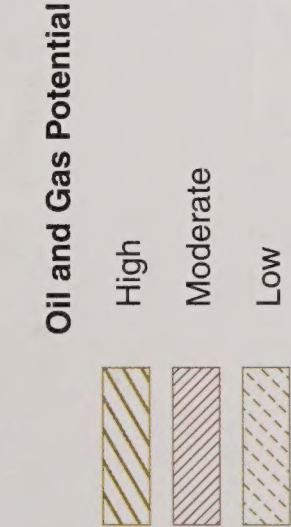






Map 23: Oil and Gas Potential

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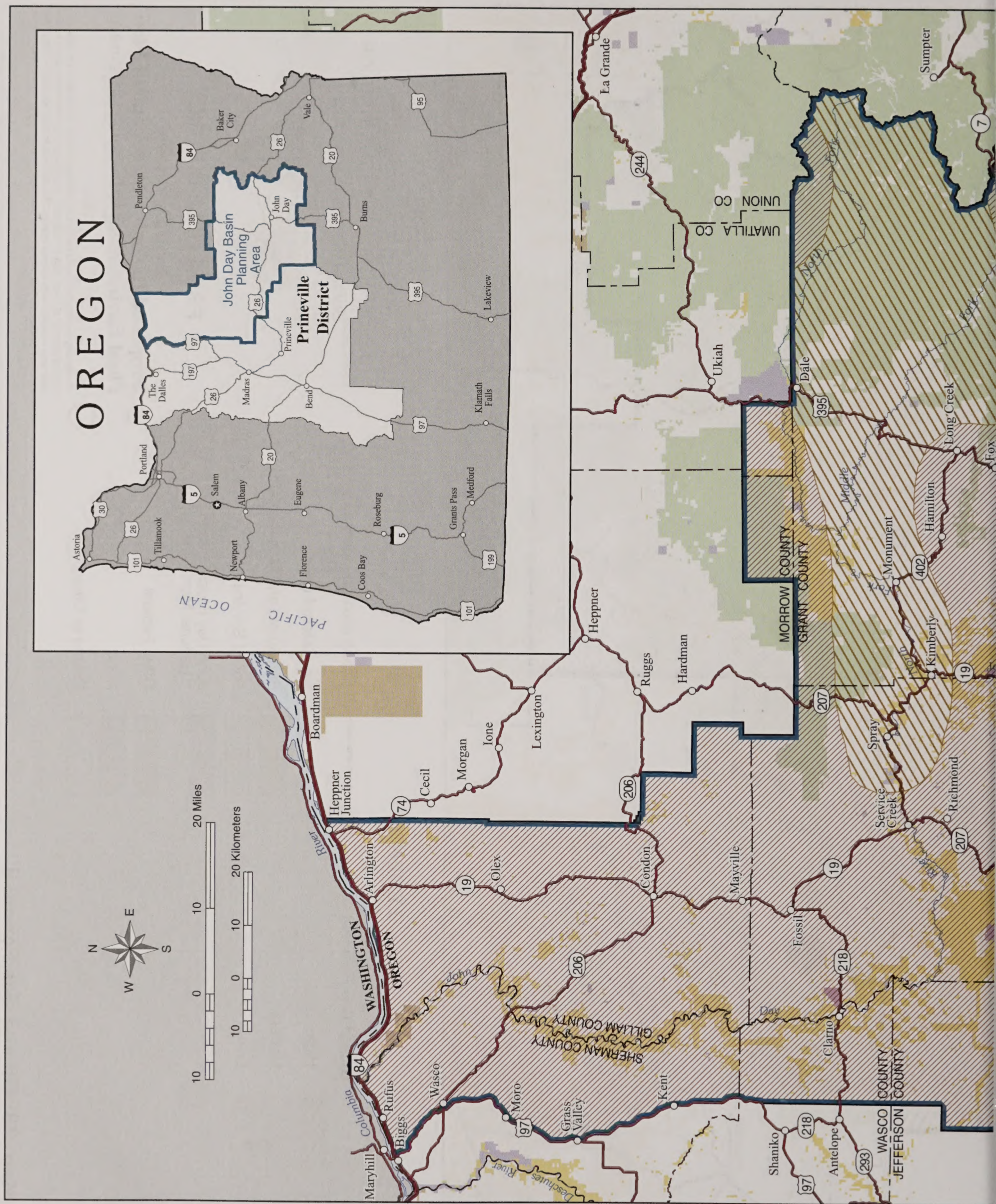
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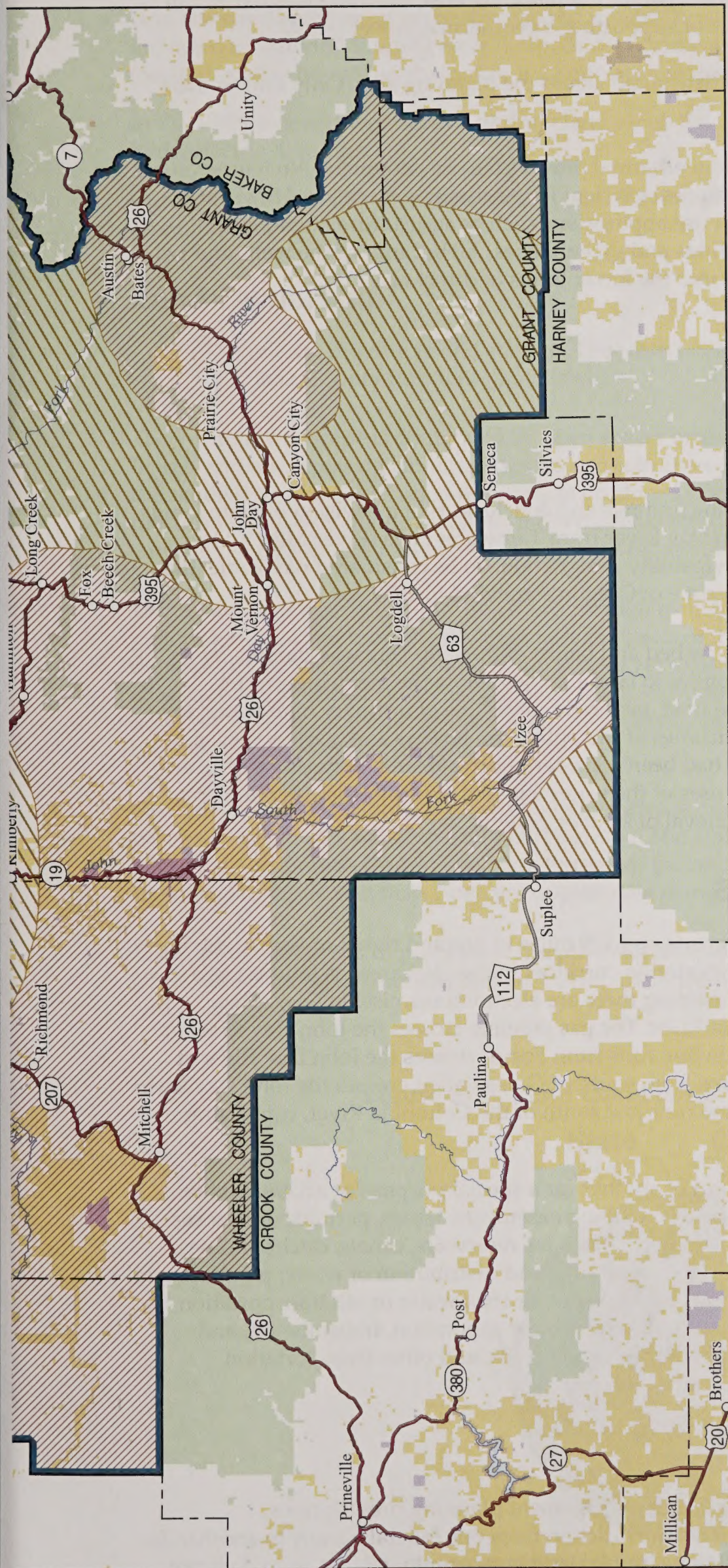
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Map 23: Oil and Gas Potential







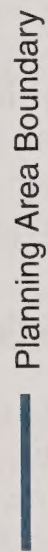


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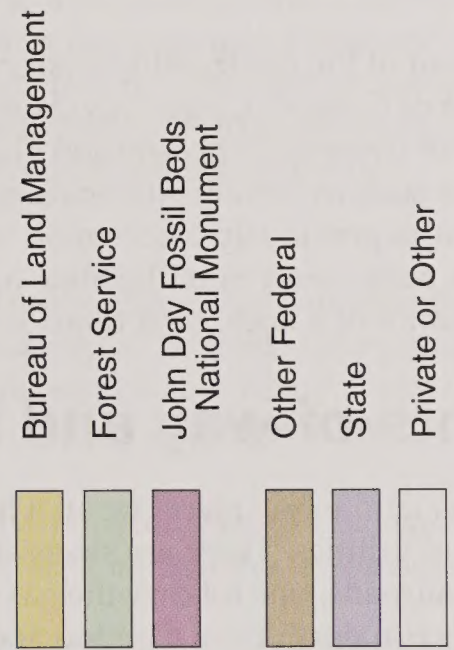
### Geothermal Potential



### Planning Area Boundary



### Administered Land



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Map 24: Geothermal Development Potential



All of the hot springs are scattered throughout the southeast part of the planning area. It is not known if any of these hot springs represent geothermal reservoirs capable of supporting a geothermal power plant.

The geothermal exploratory wells are somewhat evenly distributed across the planning area. Only four of these wells have temperatures exceeding 30°C (86°F).

Minimum temperatures of 100°C (212°F) are required for geothermal power plant development. No temperatures in wells or hot springs in the planning area have temperatures sufficient for electricity generation. However, temperatures of about 20°C (68°F) and higher have direct use applications such as aquaculture; therapeutic bathing; melting ice and snow; and heating homes, buildings and greenhouses. All but four of the wells and two of the hot springs have temperatures that are marginally into the lower limits of direct use.

## **Lands and Realty**

### **Navigability**

On June 14, 2005, the Oregon State Land Board adopted the findings and conclusions of a Division of State Lands report which found that the 174-mile segment of the John Day River from Tumwater Falls (River Mile 10) to Kimberly (River Mile 184), met the federal criteria for navigability designation. To be considered navigable, the river was determined to be navigable by craft used at the time of Oregon statehood in 1859.

As a result of the navigability designation, ownership of the bed and banks of the John Day was claimed by the State of Oregon. Under this claim, state ownership applies to land that lies below the mean high water level. This ownership declaration allows public use of the river, generally to the line of ordinary high water, for activities such as fishing and boating. The primary beneficiaries of this ruling are boaters and anglers now able to use areas previously inaccessible on what, in the past, had been considered private land. State ownership also requires permission from the State of Oregon for certain uses of the waterway (for example, the construction or maintenance of a dock, boat ramp, or moorage, or the removal of sand or gravel).

### **Rights-of-way and Easements**

The BLM land in the planning area has 249 miles of easements and 129 miles of granted rights-of-way involving roads and utilities. There are six existing utility and transportation corridors in the plan area, as follows: two follow railroads, one follows the gas pipeline, and the remaining three are electric transmission lines. The railroads run north from Condon and along the Columbia River. The gas pipeline crosses the John Day River at Thirtymile and Pine Hollow. The first electric transmission line runs from Fossil, crosses the John Day River at Cottonwood Bridge, and continues west. The next line runs from south of Grass Valley, crosses the John Day River near river mile 25, and runs toward Arlington. The last line runs just south of the Columbia River, connecting Rufus and Arlington.

Easements are acquired by the BLM in order to use the land of another for a special purpose or access. Rights-of-way are granted by the BLM to others for various purposes including easements, leases, permits, or licenses to occupy, use, or traverse public lands. Rights-of-way are authorizations for reservoirs, canals, ditches flumes, laterals, pipes, pipelines, tunnels, and other appurtenances for the storage and distribution of water; pipelines and other systems for the transportation of distribution of liquids and gases other than water or oil; transportation and distribution systems, and storage facilities for solid materials; systems for generation, transmission, and distribution of electric energy; communications systems; roads, highways, trails, and other transportation facilities; and other systems and facilities which are in the public interest.

### **Withdrawals**

A withdrawal is a management tool used to implement resource management planning prescriptions. Withdrawals also represent a means to transfer administrative jurisdiction from one federal agency to another. In addition they are used to close public lands to some or all of the public land laws or mineral law, or to dedicate



land for a specific public purpose. The restrictions generally segregate the lands from some or all of the public land laws and some or all of the mining and mineral leasing laws for a specific period of time. Examples might include a dewatering limiting river flows; or a withdrawal might close an area to non-metalliferous mining (cement quality limestone, diatomite, etc.) but open to metal mining (gold, silver, mercury, etc.).

In the 1960s federal inventories withdrew land along the John Day River anticipating the need for future hydroelectric dam sites.

Currently the John Day Basin has spring, mineral, and power site withdrawals scattered throughout the planning area.

## Land Ownership

“People are moving in and staying. They don’t need the land to make a living.”  
[Gilliam County Resident- JKA 2006]

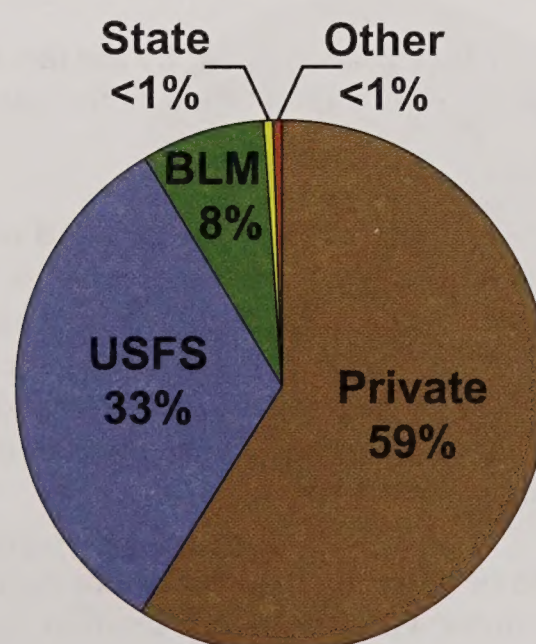
The Western landscape is dominated by open spaces broken by numerous plateaus, mountain ranges, occasional fences, and an increasing amount of urban and suburban areas. Historically, urban areas of the west specialized in the acquisition and distribution of products produced from the surrounding farms, ranches, and forests. The larger ranches were slowly divided and our modern transportation system was developed. Many urban centers are now surrounded by suburban areas, which are then bordered by hobby farms adjacent to public lands.

In the John Day Basin planning area this transition from large landownership to a more fragmented ownership pattern has occurred more slowly than in many parts of the west. Many communities maintain a remnant dependency on the surrounding lands and have yet to fully experience the transition to a Western landscape characterized by suburban areas and small farms surrounding urban areas. Settlement patterns are changing, however, as long-time ranches are bought by wealthier urbanites who often purchase for recreation or conservation purposes (Priester *et al.* 2006).

Ownership across the John Day Basin planning area is dominated by private landholdings that comprise 59 percent of the total 5.4 million acre planning area. The USFS and BLM land make up 33 percent and 8 percent of the plan area respectively. State land, Bureau of Indian Affairs, National Park Service, and Army Corps of Engineers make up less than 1 percent of plan area ownership (see Map 1 in Chapter 1 and Figure 3-35).

The southern and eastern portions of the planning area contain a high proportion of public lands managed by the USFS. These areas are characterized by USFS land in the higher elevations and BLM land in the lower elevations and drainages.

**Figure 3-35. Land Ownership in the JDBRMP Area.**



Source: BLM GIS database, 2006



Passage of the Oregon Land Exchange Act in 2000 resulted in a land ownership adjustment in northeast Oregon, primarily in Grant County. In exchange for public lands disposed of in this Act, the BLM acquired approximately 40,000 acres along the North Fork John Day River.

## **Leases and Permits (Recreation and Public Purposes Act)**

Temporary land use permits or leases may be used to authorize such activities as trespass prior to resolution, access, storage, apiary sites, National Guard or military reserve training, engineering feasibility studies, and other miscellaneous short-term activities. In the John Day Basin planning area, there are numerous agricultural leases on BLM lands for which fees are not collected.

The Recreation and Public Purposes Act (R&PP) authorizes the sale or lease of BLM managed lands for recreational or public purposes to State and local governments and to qualified nonprofit organizations.

## **Water Rights**

Water is the fundamental resource of the John Day Basin. It enables plants to grow and is essential for wildlife. People need water to drink, for play, and to support livestock grazing, irrigation, mining and other economic enterprises. Who gets water and when and how they get it are questions that have dominated the West for over a century and a half.

These questions are answered through the allocation of water rights. Surface and ground water are the property of the State, and the Oregon Water Resources Department administers the water to those who have a water right.

Water rights are important tools that have allowed BLM to accomplish a wide variety of their multiple use objectives. Water rights can be used to extract minerals, provide wildlife habitat, and preserve aquatic life. The majority of water rights on BLM land are for irrigation. The BLM actively manages over 700 acres of the irrigation water rights under the John Day Wild and Scenic River Plan and the Sutton Mountain Coordinated Resource Management Plan. The remaining 1,175 acres of irrigation occur on scattered pieces of agricultural land throughout the plan area. Approximately one-third of BLM's water rights are related to mining. The majority of the mining water rights are located near John Day, Oregon on Little Canyon Mountain. This area was hydraulically mined for gold in the late 1800s and early 1900s. Many of the water rights completely overlap each other and include a 200-acre irrigation water right.

The BLM has approximately 220 different state-administered water rights. The BLM actively manages 23 of these. Based on the Oregon Water Resources Department data, between approximately 50 and 70 cfs could be diverted under BLM water rights. This water is scattered across the basin and is not from a single stream channel. The top few sources include the John Day River, Bridge Creek, the North Fork John Day River, Rock Creek, Bear Creek, and Little Pine Creek.

The value of BLM's water rights in the John Day Basin is magnified by the fact that the basin water is over allocated (more water rights than water available) for a large portion of the year. The monthly water availability is provided in Figure 3-36.

Most water use requires that water be diverted from the river. The BLM land within the John Day Basin contains both points of diversions and places of use for state appropriative water rights. Less than half of BLM owned points of diversions supply only BLM lands (see Figure 3-37). Rights-of-way are required for most conveyances of water across BLM land. On-the-ground conditions are continually changing and water users continually ask to upgrade, move, and change the construction of water transportation and diversion facilities. These require rights-of-ways when they cross BLM land. The interconnected nature of these water rights indicates the importance of cooperative management to this key resource.

Many of the BLM ponds and springs may also be federally reserved water rights under PWR107, an executive order made by Calvin Coolidge in 1926. This order withdrew every smallest legal subdivision of the public land surveys and all lands within one quarter mile of important springs and waterholes on unsurveyed lands. The



Figure 3-36. Water Availability in the John Day Basin 4 out of 5 Years.

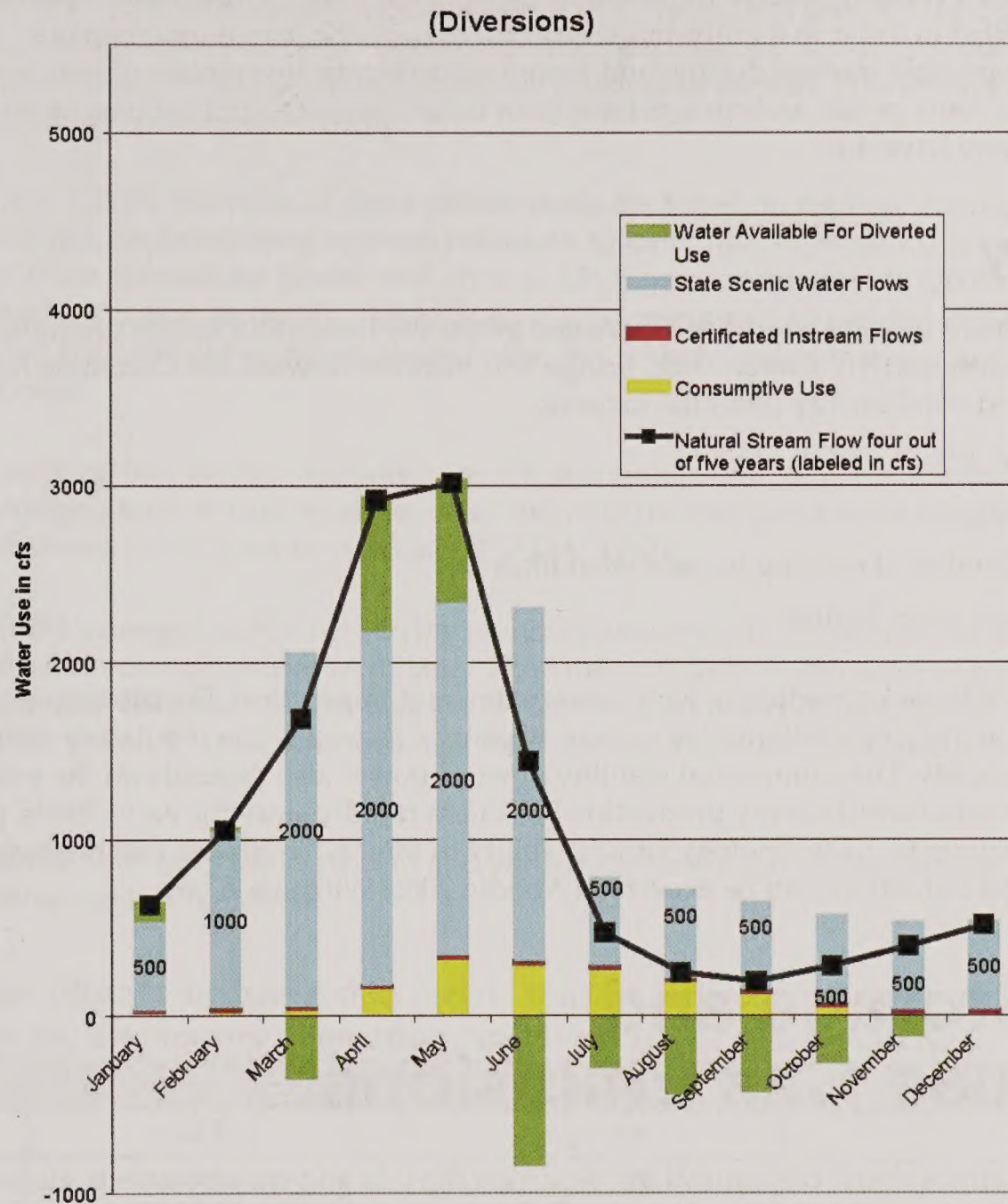
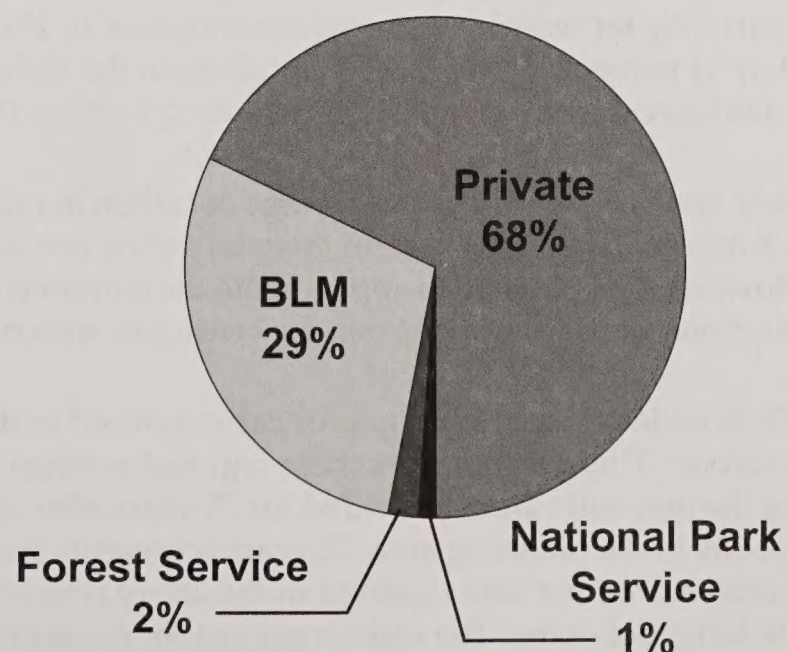


Figure 3-37. Ownership of Lands supplied Water from BLM Owned Points of Diversion.





primary purpose of this withdrawal was for current or future livestock watering and human consumption. This withdrawal includes springs and waterholes on land that was vacant, unappropriated and unreserved as of April 17, 1926. This constitutes a Federal Reserve right with a 1926 priority date. Springs and waterholes do not need to be currently inventoried in order to qualify, but it is useful to have the inventory completed to ensure that the water right is appropriately tracked during land tenure adjustments. Inventories of ponds and springs are incomplete at this time. Some ponds and springs have been issued permits, applications, or certificates from the State of Oregon, but many have not.

## Wind Energy

Leases for the development of wind energy are managed under the Lands and Realty program. Plan area wind energy potential is greatest north of Cottonwood Bridge and increases toward the Columbia River. Factors contributing to increased wind energy potential include:

- Slopes less than 20%
- Unforested areas
- Areas within 25 miles of existing transmission lines
- Areas away from water bodies

Changes in energy markets make predicting wind energy demand impractical. Decisions to invest in wind energy are dependent on the cost of alternative sources of energy, as well as the regulatory environment and other external costs to society. The commercial viability of wind power also depends on the pricing regime for power producers. The cost of wind energy production has fallen rapidly since the early 1980s, primarily due to technological improvements. As technology and the ability to forecast improves and the scale of production increases, additional cost reductions can be expected (Woodin 2005; Williams 2006).

## Carbon Storage and Greenhouse Gas Emissions

Carbon storage affects atmospheric concentrations of carbon dioxide and thereby affects global climate (Forster *et al.* 2007, p. 135; and Denman *et al.* 2007, p. 514-518). Forest and rangeland management can provide a source of carbon dioxide (e.g., through fire, timber harvest, or grazing) or a sink of carbon dioxide (i.e., through vegetative growth).

In the United States, forests have represented a carbon sink throughout the last century (Birdsey *et al.* 2006). Forests and harvested wood in the United States currently represent a carbon pool of 43.9 billion tons (U.S. EPA 2009). Forest management in the United States currently represents an annual accumulation of 191 million tons of carbon, which represents an offset of approximately 11 percent of total carbon emissions in the United States (U.S. EPA 2009). Globally, the vegetation, soil, and detritus currently store 2.3 trillion tons of carbon (Denman *et al.* 2007, p. 515).

It is not possible to describe precisely and accurately the total storage of carbon in rangelands and forests, because there is incomplete and unavailable information on the current inventory of carbon storage and the effect of management on carbon storage. However, it is possible to approximate the current condition of these pools of carbon storage using some broad generalizations and assumptions that are consistent with current theoretical approaches.

Smith *et al.* (2006) and DOE (2007) provide regional averages for carbon stored in dead wood, plants other than trees, litter, and soil organic carbon. This analysis uses these regional average values to calculate a total amount of carbon in forests, using the non-soil values provided for 75 years after clear-cut. While there is little information available on age of forests in the planning area, 75 years represents an estimated average based on BLM observations. The tons of carbon stored per acre reported in the above references is 42.3 for ponderosa pine, 71.3 for mixed conifer, and 53.3 for lodgepole pine. The carbon storage for grasslands (1.6 tons per acre) and for shrub steppe and woodlands combined (13.4 tons per acre) is calculated using values from Brown *et al.* (2004b).



Collectively, the forests within the planning area store an average 55.6 tons of carbon per acre, while rangelands (including grassland, shrub steppe and juniper woodland) store an average 9.5 tons per acre. Each ton of carbon stored is the equivalent of 3.7 tons of carbon dioxide (EPA 2009). The figures used for the current analysis focus on above-ground carbon storage (live and dead vegetation). Additional carbon is stored in the soil; Smith *et al.* (2006) report 34 percent of the carbon on dry ponderosa pine site is stored in the soil. This storage is less susceptible to management changes and is not reported here.

As noted by Smith *et al.* (2006), estimates of these carbon pools are based on regional averages and reflect the current best available data for developing regional estimates. Quantitative expressions of uncertainty are not available for most of these estimations (Smith *et al.* 2006, p. 17). However, Smith *et al.* (2006) provided confidence intervals for the values for carbon in standing dead trees of plus or minus 18.5 percent (Smith *et al.* 2006, p. 41). Uncertainty associated with soil carbon is not quantifiable, but is likely higher than the uncertainty associated with standing dead trees.

Plant communities store carbon during vegetative growth and emit carbon as plant materials decay. The net change in carbon (storage minus decay) is estimated at about 0.3164 tons per acre on rangeland (Svejcar *et al.*, 2008) and about 0.5679 tons per acre on forested land (USDA, 1992).

The rangelands on BLM managed public land in the planning area include 57,988 acres of grassland; 283,631 acres of shrub steppe; and 8,149 acres of juniper woodland. The forests include 36,285 acres of ponderosa pine; 57,788 acres of mixed conifer; and 473 acres of lodgepole pine. Plant communities on the 4,993,613 acres of private, state and other federal lands within the planning area also store carbon. These lands are about half rangeland and half forest (Table 3-6).

The figures above can be used to estimate current and annual above-ground carbon storage. Carbon storage in the planning area is summarized in Table 3-28.

**Table 3-28. Carbon Storage (expressed in metric tons of carbon dioxide equivalents [CO<sub>2</sub>e] in live trees, dead trees, understory vegetation, and litter in the planning area).**

	Acres	CO <sub>2</sub> e stored	CO <sub>2</sub> e accumulated annually
BLM	444,314	35,827,039	608,759
Other ownership	4,993,613	601,405,782	8,185,955
Total	5,437,927	637,232,821	8,794,714







# Chapter 4

## Environmental Consequences





# Chapter 4 Environmental Consequences





# Introduction

In accordance with NEPA, this chapter describes the direct, indirect, and cumulative environmental consequences of the land management alternatives described in Chapter 2 on the affected environment described in Chapter 3. The following environmental consequences are described by resource or resource use. Key indicators are used to assess the direct and indirect effects of management alternatives and are described for each resource or resource use. Assumptions common to all analyses are described first; assumptions that are more specific are described in the following sections.

## Summary of Changes between Draft and Final

Each resource evaluated the effects of changes to the alternatives. Figures and conclusions were updated where there were substantive changes or discussion was necessary based on the type and amount of effects determination changes. The Summary of Changes in Chapter 2 (proposed actions) can be used as a guide for where effects analysis has been updated. Additional effects discussion has been added relative to OHV noise-related issues, carbon storage, greenhouse gas emission, and the effects of proposed actions on Lands and Realty. In the Draft, cumulative effects were included under the heading of Other Effects. This has been changed to Cumulative Effects, and a summary of reasonably foreseeable actions is contained at the beginning of this chapter.

## Analytical Assumptions

The following key assumptions are common to all alternatives.

### Planning Time Horizon

The environmental and social effects of resource management or resource use extend across long and short term planning horizons. For the purposes of these analyses, "long term" is considered to be about 50-100 years, and "short term" is considered to be about 10-30 years. "Temporary" is considered to be less than 5 years and preferably less than 2 years.

### BLM Budget

It is assumed that all alternatives would be adequately funded to implement them as designed and described in Chapter 2. However, some effects analysis utilizes historic activity levels as a constant for comparing alternatives.

### Threatened and Endangered Species

It is assumed that the current listing status for species under the Endangered Species Act would remain in effect. Additionally, since BLM manages candidate species similar to listed species (to avoid contributing to the need to list them), then any future listing would have little measurable effect on the BLM's management approach. Analysis of RMP impacts on a particular species would remain relevant or conservative regardless of any future listing or delisting action.

### Natural Disturbances

This analysis does not include estimates of future natural disturbances except in the case of potential future stand replacement wildfire disturbance, in some instances. It is assumed that wildfires, windstorms, disease, insect infestations, and subsequent resource salvaging would occur in the future under all five alternatives. Although the alternatives may result in differences in the landscape effects of natural disturbances, the specific location, timing, severity, and extent of such disturbances are not predictable at the scale of the plan area.



## Data, Methods, and Models

Assessments of the effects of the alternatives are both quantitative and qualitative in nature, and they consist of procedures, models, or information from professional sources.

A Geographic Information System (GIS) database was used to analyze the environmental consequences of the alternatives. This database includes information on such things as vegetation, management units, roads, hydrology, soils, elevation, ownership, wildlife habitat, energy, minerals, and noxious weeds. The GIS data provides the locations of the important features and their attributes that relate to the lands and the relevant decisions of this planning effort. The John Day River Basin Resource Management Plan ID Team worked with a team of GIS specialists to create a spreadsheet that recorded both geospatial data and analytical requirements. Based on defined requirements, the relevant geospatial data was reviewed, updated and organized, much of which has been placed into a central geospatial database. Metadata for each theme was created. Metadata is information that explains the source, history, attributes and individuals responsible for each of the data used in the PRMP/FEIS. The database was used by GIS analysts in the BLM Prineville District, as well as in the BLM Oregon State Office in Portland. The data was used to create the analyses and the maps in the PRMP/FEIS. The GIS team automated the geospatial analytical processes and generated the acreage summaries by resources issues, alternatives and category. The Bureau is a member of the Department-wide site license for ESRI's GeoProcessor software, and ArcMap version 9.2 was used to complete the analyses. This data is available to the public upon request.

The Water Erosion Prediction Project (WEPP) model is a computer program that describes the processes that lead to erosion. A subset of this model (the WEPP Forest Road Erosion Predictor) was used to estimate erosion and sediment delivery from the JDB RMP plan area road network. Model input parameters include road design, road surface, traffic level, road gradient, road length, road width, fill gradient, fill length, buffer gradient, buffer length, rock fragment percent, soil texture, and climate. These input factors were estimated for each segment of road, and the model was run for 30 years using a climate representative of the road segment area. Outputs for each road segment include the average annual sediment leaving a road segment and average sediment leaving a buffer. The sediment outputs were summarized and totaled by road designation and stream crossings. These summaries were used for comparing alternatives.

Road banding was used to analyze the effects of roads on wildlife habitat. The methodology utilized Arc GIS 9.2 to buffer open roads by six concentric distances of 394 yards each. Resultant buffers formed bands of varying distances from open roads: band 1 = zero to 394 yards; band 2 = 395 to 788 yards; band 3 = 789 to 1,182 yards; band 4 = 1,183 to 1,576 yards; band 5 = 1,577 to 1,970 yards; and band 6 = 1,971 to 2,364 yards.

## Incomplete or Unavailable Information

The Council on Environmental Quality (CEQ) requires that a Federal agency identify relevant information that may be incomplete or unavailable for an evaluation of reasonably foreseeable significant adverse effects in an EIS (40 CFR 1502.22). If the information is essential to a reasonable choice among alternatives, it must be included or addressed in an EIS. Knowledge and information is, and would always be, incomplete, particularly with infinitely complex ecosystems considered at various scales.

The best available information pertinent to the decisions to be made was used in developing the RMP/EIS. Considerable effort was taken to acquire and convert resource data into the most useful format for the analyses conducted.

Certain information was unavailable for use in developing this plan. In the absence of quantitative data, impacts are described based on the professional judgment of the interdisciplinary team of technical specialists using best available information. Impact analysis based on incomplete or unavailable information is identified below; however, no incomplete or unavailable information was deemed essential to reasoned choice among the alternatives analyzed in this chapter.

- Although global and national estimates of climate change are available, regional and state-specific estimates and quantification techniques are in varying levels of development.



- Analytical tools necessary to quantify specific effects of human activities on climate are presently unavailable. Therefore, the alternatives present a comparative analysis of the production of gases believed to affect climate and put these emissions in context with state and national emissions.
- The uncertainty regarding regional changes in climate also means that it is not currently possible to predict the specific effects of climate change on resources within the planning area. Regardless of the eventual change in climate, the effects would be largely the same in all alternatives, so a comparative analysis of effects of climate change on resources would not help the BLM decision-maker choose between alternatives.
- Route inventories have not been completed for the entire planning area (see Travel Management section of Chapter 3 for a detailed account of the status of this inventory).
- A detailed forest health management plan (logging systems, transportation, etc.) has not been developed for the North Fork acquired lands.
- Inventories for all special status plants and animals are incomplete for the planning area.
- No data exist that quantify existing soil bulk density in areas of past treatments or soil processes other than erosion potential, including soil nutrient and water cycling in the planning area.
- Inventories for noxious weeds are incomplete for the planning area.
- Times and level of noise experienced within or at residences adjacent to LCM from off-highway vehicle use within the LCM Special Recreation Management Area; or the potential effects physically or psychologically of that noise on residents.

## Social and Economic Analysis Methods and Issues

Social and economic analyses included in the PRMP/FEIS consist of eight central Oregon counties: Gilliam, Grant, Jefferson, Morrow, Sherman, Umatilla, Wasco, and Wheeler.

Potential economic impacts were assessed using the Forest Economic Analysis Spreadsheet Tool (FEAST) developed by the USDA Forest Service Inventory and Monitoring Institute (IMI) in Fort Collins, Colorado. This tool uses a Microsoft Excel workbook as an interface between user inputs and data generated using the IMPLAN input-output modeling system. For additional information on social and economic analysis methods, see Appendix R.

Biomass opportunities may exist, but are not analyzed given a lack of understanding of obstacles to implementation and impracticalities of projecting future scenarios for implementation. Potential impacts on non-market values, including natural amenities and quality of life, non-use values, and ecosystem services, are assessed in qualitative terms as appropriate.

## Cumulative Effects

Cumulative effects result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions (40 CFR 1508.7). Some environmental effects described in this environmental impact statement have incremental impacts that result in cumulative effects on a particular resource of concern. The discussion of effects on each resource in this chapter incorporates cumulative effects. Baseline information on existing conditions is the aggregate result of all past actions and previous land use plans (as described in Chapter 3); therefore, this chapter does not individually analyze these past actions.

For the National system of public lands, reasonably foreseeable future actions are those that would occur under current or proposed land use plans and that the Responsible Official of ordinary prudence would take into account. For private lands, reasonably foreseeable future actions are those actions that would occur with the continuation of present management at current trends or those allowable under state and local laws and regulations that the Responsible Official of ordinary prudence would take into account.



## Reasonably Foreseeable Future Actions Considered in Assessing Cumulative Effects

For purposes of this analysis, it is assumed that other federal and state agencies would continue to implement their current plans as written. Since private, industrial, and non-industrial lands are owned by a variety of individuals and entities, the BLM did not attempt to predict the various scenarios that could occur on adjacent lands across space and time. It is assumed that private lands would continue to provide the same overall amount and spatial pattern of vegetation, habitat and disturbance over time as presently exists.

Future management on BLM, Forest Service, State, private, and other land is assumed to be very similar to current management. The Forest Service Schedule of Proposed Actions (SOPA) is indicative of the types of management actions that are likely to continue into the future throughout the planning area. The majority of vegetative treatments include thinning from below, underburning, small forest products (post, poles, and firewood), salvage, hazard tree removal, noxious weed treatment and juniper reduction. The majority of forest lands in the plan area are administered by the Forest Service (Ochoco, Malheur, and Umatilla National Forests). Vegetation management direction for the Forest Service is very similar to BLM. The trend for forested vegetation would be the reduction of sapling to small log size material generally from the understory.

Private land treatments are similar; however, more of the large structure trees are removed. Private land managers will in general continue to recover the value of dead and dying timber consumed in wildfires.

The Forest Service is currently or will soon update their forest plans for the Umatilla, Wallowa-Whitman, Malheur, and Ochoco National Forests, which are the adjacent forests to this planning area. This will afford an opportunity to address issues similar to those addressed in this BLM plan. Forest Service plans are not likely to propose radical adjustments from current land management (except for complying with updated travel management regulations), but are likely to add flexibility and resource protection. The updated travel management plans will include limits to most OHV use to designated routes. Additional resource protection may include phasing out some grazing allotments.

The Forest Service will analyze existing and proposed mining plans of operations for active mining operations, such as those within the Lower Granite Creek Watershed. Land managers will continue to close abandoned mines by filling in adits (see glossary), trenches, and shafts with earth and rock from existing mine spoil piles and re-contouring slopes adjacent to work area.

Forest Service plans may establish special management areas or zones with specific resource or use emphasis. For example, current Forest Service plans established Research Natural Areas, such as the Shake Table plateau between Murderer's Creek and South Fork Murderer's Creek. Aquatic restoration planning and implementation by the Forest Service and other Designated Management Agencies (DMAs) are likely to result in at least minor improvements of all the indicators of aquatic condition and protection of the source water and domestic water supplies.

Assuming that national trends in the migratory patterns of retirees to the inland Northwest continue, private lands are likely to become sub-divided into smaller parcels for retirement homes and recreation uses. Road-stream crossings and watershed cover changes are likely to increase with increased population and recreation uses.

Planning area land managers generally share the objective of reducing ladder fuels to help reduce the potential for crown fires. This includes thinning and using prescribed fire to reduce potential for stand-replacing fires. Forest managers will conduct small tree thinning; underburning; hand piling and lopping of slash to reduce fuels; removal of hazard trees; and recovery of the value of dead and dying timber damaged by wildfires. Thinning of overstocked stands of ponderosa pine and Douglas-fir is proposed to improve stand health and vigor. Many thinnings will be done from the understory, with the largest and most vigorous trees left after thinning.

The amount of forest health treatments on non-BLM lands is largely dependent on global fluctuations of social, economic and environmental demands.



## Mitigation

The Council of Environmental Quality's regulations state that mitigation includes avoiding, minimizing, rectifying, reducing, eliminating, or compensating for adverse environmental impacts. Measures used in mitigating effects from management activities are included in the design of the alternatives, and therefore assessed as part of the effects of alternatives.

## Summary of Environmental Consequences

Table 4-1 synthesizes environmental consequences (including social, economic, and ecological) by resource or resource use. It qualitatively compares how the alternatives meet the long-term goal of developing management practices that ensure long-term sustainability of a healthy and productive landscape, and add to community stability through resource use and enjoyment, as described in Chapter 1.

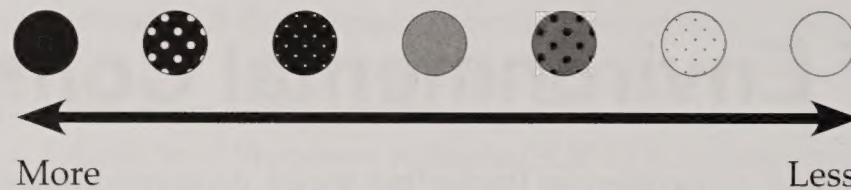
Tables 2-24 and 4-1 display the overall key effects between alternatives. Relative rankings in Table 4-1 are based on the comparative net differences in effects of the management alternatives on each specified resource or resource use. Some effects of alternative actions meet the purpose and need to varying degrees. These differences add-up to an overall net effect. For example, reducing social and ecological conflicts between livestock grazing and other uses could result in an economic effect due to lower availability of AUMs if allotments must be closed as a result. Similarly, increasing the amount of transportation system roads could increase public access to BLM lands, but could also increase road maintenance. Table 4-1 displays net effects of the alternatives considering these differences. Examples of indicators that differ in their outcomes across alternatives are also displayed. Detailed analyses of effects are described later in this chapter.

It is difficult to address all needs across a broad range of resource values and land uses. Each of the alternatives involves compromise; however, Alternative 2 is preferred over the other alternatives because overall, it best meets the purpose and need for a revised plan, as described in Chapter 1. Alternative 2 is as good as, or better than other alternatives at addressing resource issues. The possible exception is recreation, where the availability of off-road vehicle travel routes is greater in Alternative 3.



**Table 4-1. Synthesis of Environmental Consequences (Including Social, Economic, and Ecological) of Management Alternatives on Resources and Resource Uses in the John Day River Basin Plan Area.**

To what relative degree do the alternatives meet the purpose and need, significant issues, and management concerns, as described in Chapter 1?

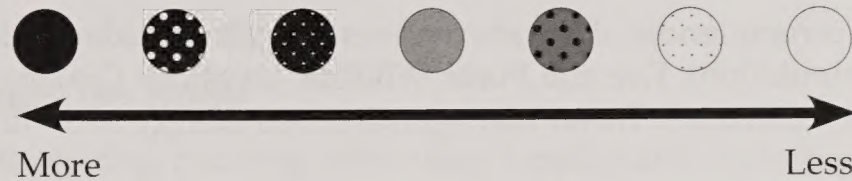


<b>Issue 1: Landscape Health.</b>						
Would the plan achieve healthy plant and animal communities? Would the plan allow fire to play its ecological role while helping to ensure public safety from wildfire?						
Resource or Resource Use	Examples of indicators that show differences in effects between alternatives.*	Alternative				
		1	2	3	4	5
Vegetation	Difference between current ecosystem conditions and the Acceptable Range of Variability (ARV).					
Fire and Fuels	Wildfire risk to communities at the wildland urban interface.					
Aquatic Resources	Difference between current and proper functioning conditions.					
Wildlife	Security habitat.					
<b>Issue 2: Access and Travel Management.</b>						
Would the plan result in a road system that would efficiently deliver goods, people, and services across the plan area? Would the plan provide for motorized and non-motorized recreation, while protecting natural and cultural resources?						
Access and Travel	Access to public lands. Road maintenance costs.					
Recreation	Availability of OHV routes and Open areas. Conflicts between OHV and other uses.					



**Table 4-1 (continued). Synthesis of environmental Consequences (Including Social, Economic, and Ecological) of Management Alternatives on Resources and resource Uses in the John Day Basin Plan Area.**

To what relative degree do the alternatives meet the purpose and need, significant issues, and management concerns, as described in Chapter 1?



**Issue 3: North Fork of the John Day River**

Does the plan protect native fish, wildlife habitat, and public recreation on newly acquired and adjacent BLM lands along the North Fork John Day River?

Resource or Resource Use	Examples of indicators that show differences in effects between alternatives.*	Alternative				
		1	2	3	4	5
Wild and Scenic Rivers	Outstandingly Remarkable Values (ORVs).					
<b>Other Management Concerns*</b>						
Social and Economic Values	Employment and labor income.					
Soils	Erosion.					
Wilderness Characteristics	Maintenance of wilderness qualities.					
Wilderness Study Areas	Degree of protection of wilderness values.					
Visual Resources	Visual quality.					
Caves	Degree of habitat protection.					
Livestock Grazing	Available AUMs in areas of high use or ecological values.					
* Management of the following concerns vary none or little in their effects across alternatives: Air Quality, Noxious Weeds, Wild Horses, Areas of Critical Environmental Concern, Back Country Byways, Native American Values, Paleontology, Cultural Values, Lands and Realty, Agriculture Lands Management, and Minerals and Energy.						

## Resource Uses Not Affected by the Alternatives

The following resource uses are not anticipated to be appreciably affected by alternatives for other resources or resource uses: Areas of Critical Environmental Concern, Back Country Byways, Lands and Realty, Agricultural Land Management, and Hazardous Materials Management. However, the environmental consequences of these resource uses on other resources are analyzed in the following section.



# Analyses of Environmental Consequences by Resource or Resource Use

## Soils

Analysis of the environmental consequences of the alternatives on soils considered the following key resources or resource uses: Vegetation (manipulation), Fire and Fuels, Wildlife, Livestock Grazing, Recreation Opportunities (motorized and non-motorized recreation), Travel Management, and Energy and Minerals.

Indicators used to compare environmental consequences between alternatives include: acres of treatments with potential to detrimentally damage soils, soil erosion [e.g., tons of soil eroding using Water Erosion Prediction Project (WEPP) road model outputs], acres of sensitive soils, and acres treated on sensitive soils.

## Soil Indicators

- **Area (acres) of treatments with potential to detrimentally damage soils.** A detrimentally impacted soil will likely not recover to a native perennial vegetation cover within 2 years following an impact disturbance.
- **Acres of surface-disturbing activities and treatments on sensitive soils.** Ground disturbance on soils highly vulnerable to erosion can be more detrimental in a shorter period of time than in areas identified as moderately or not vulnerable to erosion.
- **Soil erosion (tons of soil eroded).** Soil erosion is the displacement of soil from the earth's surface. Some rates of soil erosion are part of landscape evolution. Soil erosion referenced in this document is at rates and scales beyond those associated with natural soil erosion. Compacted or displaced soils are more susceptible to erosion.
- **Soil productivity.** Soil productivity is the ability of soil to grow plants. Soil productivity is an indicator of how well management would attain land use plan objectives for soils. Coarse wood in forest and woodland sites is essential to long-term carbon storage and soil productivity. Healthy stands of native bunch grass are good for maintaining and replenishing organic matter necessary for rangeland soil productivity.
- **Soil function.** Soil function is the capacity of soil to: (1) sustain life, diversity, and productivity; (2) regulate and partition water and solute flow; (3) filter, buffer, degrade, and detoxify potential pollutants; and (4) store and cycle nutrients. Soil function is reduced in compacted soils. Reduced soil function in compacted soils is related to reduced pore space, less biologic activity, increased water runoff, and loss of organic material. Macrobiotic crusts store and cycle nutrients in soil.

## Soil Assumptions

- Under extreme weather conditions, wildfires will burn heavy coarse fuel loads (tree canopy cover greater than 40%) hot enough to detrimentally impact the soil (USGS 2007).
- The longer an area is in a detrimentally impacted condition without protective soil cover, the greater the potential for increased erosion, loss of soil productivity, and decreased soil function.
- Open OHV designations with high intensity use will decrease soil productivity and long-term soil function.
- The additive effect of repeated treatments on a forested site can compact soils.
- All alternatives will implement soil BMPs.
- Relative to soil function, sites in early seral condition are generally in 'poor' ecological condition and prone to invasion from weeds and annual grasses. Late seral condition sites are generally in 'good' ecological condition and are not currently prone to invasion from weeds and annual grasses. Mid-seral condition sites fall in between.



## Analysis of the Effects of the Alternatives on Soils

The analyses described herein are focused on actions of potential measurable environmental consequence. The following resources or resource uses under all alternatives would either have no difference in effects on soil resources, or effects would be eliminated by the use of Best Management Practices for: Air Quality, Vegetation (special status plants), Lands with Wilderness Characteristics, Cave Resources, Native American Uses, Paleontological Resources, Special Designations (wild and scenic rivers), and Lands and Realty (including Renewable Energy).

### Soils Management Effects on Soils

Soil restoration actions include seeding, planting, subsoiling, lopping and scattering of cut vegetation, and other actions. Applying restoration treatments improves vegetative soil cover, increases biologic activity in soil, decompacts soils, and restores soil function. Soil restoration actions in upland areas ensure a less than 10% probability of unnatural soil erosion. Alternative 1 and Alternatives 2-5 prescribe actions to limit erosive conditions, but only Alternatives 2-5 prescribe actions to restore soil productivity and soil function. All alternatives would conserve soil productivity and function by avoiding disturbance that requires restoration.

Guidelines provide specific limits and criteria for soil management. Guidelines under Alternatives 2-5 provide limits to and restore areas of detrimental soil impacts, retain large wood, and prescribe grazing that increases biological soil activity. These actions reduce the amount of detrimentally impacted soils, contribute organic matter for soil function, and improve soil productivity, respectively. There are no guidelines for the amount of detrimental soil impact, large wood retained, or grazing prescriptions under Alternative 1. Therefore, soil management under Alternatives 2-5 would improve overall soil function more than Alternative 1.

Some soil guidelines provide limits and criteria specific to soils near facilities. Implementing, maintaining and restoring proper drainage and erosion control on all existing facilities reduces erosion from and around those facilities. Trading the expansion of soil disturbance area associated with new facilities for proportional rehabilitation, decommissioning, or obliteration of other disturbed areas maintains a constant area of soil disturbed by facilities (e.g., roads, trails, campsites, and landings). The existing area of soils disturbed by facilities would be reduced or maintained through trades. Requiring a change in road maintenance intensity to a level where excess erosion is verified and controlled systematically would eliminate excess erosion (6-inch ruts) across the entire road network. Management of soils near facilities would result in less erosion and less area disturbed by facilities under Alternatives 2-5 than Alternative 1.

Best Management Practices for soils would minimize erosion initiated by other resources or resource uses. The amount of erosion reduced by the utilization and effect of Best Management Practices would be approximately the same under Alternative 1 and Alternatives 2-5.

### Non-Motorized Recreation Effects on Soils

Recreation management of the plan area is divided into Primitive, Back Country, Middle Country, Front Country, Rural and Urban settings. Non-motorized recreation is emphasized in Primitive and Back Country settings, but is available under all recreation settings. Non-motorized activities include hiking, mountain biking, horseback riding, hunting, camping and similar uses. Non-motorized activities can occur on designated sites or may be dispersed across the landscape.

Public use at designated sites often removes vegetative soil cover and compacts the soil surface (Beardsley and Wagar 1971; Cull *et al.* 1981). Losses of soil cover decreases soil productivity and may increase erosion. Compaction of soils also decreases soil function. In this plan, designated sites for hiking, camping and mountain biking would generate detrimental soil impacts that are similar for all action alternatives.

The desire for non-motorized recreation, other than river rafting, is very light in the plan area. As a result, there are very few designated sites for non-motorized recreation. All alternatives continue the designated camp sites along the river corridors and on designated trails. The action alternatives include proposals for new developed sites in Dixie Creek and the North Fork John Day River. The Dixie Creek area would include an emphasis on a mountain bike trail network that would be prone to erosion and compaction. Designated campgrounds proposed



for the North Fork John Day would shift camping away from the river. This shift would reduce compaction and erosion of the riparian soils along the river. Subsequent erosion and compaction at the developed camp sites would be minimized through the use of BMPs. Prudent monitoring and on-site enforcement of the proposed campgrounds and mountain bike trails would minimize erosion and compaction associated with these activities.

Guidelines for trading expansion of new developed sites with proportional rehabilitation, decommissioning, or obliteration of existing disturbed areas would maintain or decrease current acres disturbed across all alternatives.

Under all alternatives, most non-motorized recreation opportunities would continue to be dominated by dispersed use and cause limited compaction and erosion. Dispersed recreation may create scattered trails. Trails that occur on steep slopes or concentrate use over a large area could lead to soil compaction and erosion. Sediment eroded from trails is often deposited directly into small streams. This excess sediment may increase erosion and transport rates of alluvial soils and cause gullies along small streams. However, across the plan area, the non-motorized recreation is light. This light level is expected to continue and result in minimal erosion under all alternatives.

## **Motorized Recreation Effects on Soils**

Motorized recreation is part of the recreation setting in the portions of the plan area allocated as Middle Country, Font Country, Rural, and Urban. Approximately 80% of the plan area is available for motorized recreation under Alternatives 2-5, and approximately 85% of the plan area is available under Alternative 1, based on OHV designations of Open and Limited.

Motorized recreation includes the use of several types of off-highway vehicles (OHVs) such as: motorcycles, "quads," and full-sized 4-wheel drive and passenger vehicles. These OHVs have some effects on soils that are slightly different than highway travel. With OHVs, speed is often a factor. Also, OHV use often entails spinning wheels, high speed turns, hard acceleration, hill climbing, and travel. When this use occurs on very wet or very dry unimproved trails or native soils, it can cause accelerated erosion and also soil displacement and compaction. With increased motorized recreational activity, the acres of surface-disturbing activities, erosion and compaction would increase while soil productivity and biological soil activity would decline. The use of OHVs is allowed in areas designated as either Open or Limited to designated roads and trails. In Closed areas, OHV use is prohibited, except for limited administrative use.

Areas designated as Open for OHV use allow cross-country travel without use restrictions. Over time, repeated use of cross-country paths by motorized recreationists and travelers, particularly near population centers, results in the creation of roads/trails on public and private lands. Cross-country OHV use spreads weeds that may alter soil characteristics such as fire regimes, biologic community, and soil production. Even light soil surface disturbance from OHV use can disrupt growth of macrobiotic crusts that are important for nutrient processing and soil function. Alterations in soil characteristics can decrease soil productivity.

All these possible effects to soils would exist and continue under alternatives that designate Little Canyon Mountain for OHV use. Alternative 1 for the Little Canyon Mountain Special Recreation Management Area presently allows for unlimited cross country OHV travel. This permits OHVs to travel in any area regardless of sensitive soil designation. All of the action alternatives restrict OHV travel to the pit areas and to designated routes only. The pit areas were hydrologically mined in the past and have historically had heavy OHV use resulting in detrimentally disturbed soil conditions. The pit areas are located in confined areas and do not allow displaced sediment to move offsite. OHV use outside of the pit areas would be on designated trails designed to minimize soil disturbance impacts. While soil conditions would not improve in the pits areas under the Open designation for the action alternatives, confining open OHV travel to the pit areas and designated routes would minimize soil disturbance in the remainder of the Little Canyon Mountain Special Management Area. Soil objectives will be made consistent with direction in Executive Order 1161 for the action alternatives, after the existing detrimentally disturbed non designated OHV tracks are closed, stabilized, rehabilitated, and enforced with specific actions in the implementation plan for that area.

Alternative 1 designates more than half the BLM lands Open for OHV use. Only Wilderness Study Areas or other special management use areas are not designated as Open. Alternatives 2 and 3 designate Open OHV use on less than 1% of the BLM lands. Alternatives 4 and 5 contain the least amount of Open OHV use. Therefore, accelerated



erosion, compaction, soil displacement, and loss of soil function due to Open OHV use varies from greatest under Alternative 1, much less under Alternatives 2 and 3, and least under Alternatives 4 and 5.

Areas designated as limited to roads and trails identify paths for various types of uses. In general, motorized use paths remove vegetative soil cover, weaken macrobiotic crusts, and compact soils. This loss of cover increases erosion and the compaction decreases soil function. Closure and rehabilitation of hill climbs and paths with gullies reduce erosion and improve soil function. In general, motorized use paths and the subsequent loss of soils function are greatest under Alternative 3, less under Alternative 1, and least under Alternatives 2, 4, and 5.

The use of BMPs when designating and designing the trail system under the Limited OHV designation reduces the amount of erosion and compaction that would occur under user-created trails. Improved trail design encourages compliance by providing a desirable riding experience. This reduces the probability that a user-created trail would result in detrimental soil impacts. Directional signs and numbering of major roads/trails encourage users to stay on designated routes and help them to navigate more efficiently. Monitoring and enforcement of trail systems improves compliance and reduces off trail use. Compliance with use of designated trails and use of BMPs is essential for minimizing erosion and loss of soil function from poorly designed trails. Alternative 1 does not contain standards for OHV trail design, desirable routing or designation criteria. Under Alternatives 2-5, designated trails are selected to meet Soils objectives, are designed with soils BMPs, and provide an efficient and desirable riding experience. As a result, the erosion, compaction and area of detrimental soil impact from Limited OHV designations would be much less under Alternatives 2-5 than Alternative 1.

The OHV numbers and pressure for their use is increasing throughout the plan area. There is more OHV pressure around population centers. Considering all of the fuels and vegetation treatment needs, new routes created by thinning woodlands could create new opportunities for OHV travel off planned designated routes creating possible new unintended erosion and sedimentation effects. Increased compaction from ground based vegetation treatments would add intensity to flashy runoff into drainages further destabilizing riparian communities.

Due to the combination of OHV closures proposed by the Forest Service in adjacent lands in the plan area, closures on private lands, and BLM closures in the action alternatives, cross-country OHV users may concentrate their use in the small designated Open areas proposed under specific alternatives (Rudio Mountain, Golden Triangle, and Little Canyon Mountain). By concentrating use, soil productivity loss in those areas may be greater than under either the broad Open areas of Alternative 1 or the mostly Limited designations of the action alternatives. However, providing designated Open areas under the action alternatives may improve compliance with designated trail systems, thereby maintaining or improving soil productivity across the remainder of the plan area.

### ***Little Canyon Mountain OHV Soil Impacts***

According to the soil erosion vulnerability map (Map 3, Chapter 2), 7 percent of the Little Canyon Mountain OHV area is not vulnerable to erosion, 62 percent is highly vulnerable to erosion, 29 percent is moderately vulnerable to erosion, and 2 percent is moderately vulnerable to loss of soil productivity due to soil depth. About 38 percent of the 16 miles of existing road network in LCM has a high erosion probability. In all of the alternatives with limited OHV use it is important to monitor the trail use and erosion potential for the areas identified as highly vulnerable to erosion or on the road network with a high erosion probability as identified (Map 25, Chapter 4). The use of BMPs for trail construction and maintenance for these areas is also critical. For Alternative 5, all of the LCM area is closed to motorized OHV use. So Alternative 5 is the least impacting for detrimental soil impacts from OHV use. Alternative 1 or the existing condition has all of the LCM area open to motorized OHV use so Alternative 1 is most impacting to soils from OHV use. Alternatives 2 and 3 limit use to designated trails. Alternative 2 limits type of motorized use in both pits, while Alternative 3 limits type of motorized use in the lower pit (North Pit) and leaves the upper pit (South Pit) open. Both alternatives allow the designated type of motorized vehicle to use the pits without restrictions so impacts would be similar between alternatives 2 and 3, and intermediate in impact from the previous two alternatives. Alternative 4 differs from Alternatives 2 and 3 by having the lower pit (North Pit) closed to all OHV use and the upper pit (South Pit) Open to all OHV use. Both LCM pit areas are about 2 acres each in size and would comprise less than 0.1 percent of the total LCM area. According to the soil erosion vulnerability map (Chapter 2, Map 3) the lower pit (North Pit) has 75 percent of its area identified as moderately vulnerable to erosion, 21 percent as not vulnerable to erosion, and 3 percent as highly vulnerable to erosion. The upper pit has 26 percent of its area identified as moderately vulnerable erosion and 74 percent as not vulnerable



to erosion. The upper pit is better from a soil erosion standpoint but may have less relief for OHV recreation opportunities. Closing the loser pit, which is more susceptible to erosion, makes Alternative 4 less impacting than Alternatives 2 and 3. For all the alternatives, rutting hazard is greatest after snow melt in the early spring when soils are saturated or during intense precipitation events during the summer and fall when soils are not frozen.

### **Rudio Mountain OHV Soil Impacts**

According to the soil erosion vulnerability map (Map 3, Chapter 2), 42 percent of the Rudio OHV area is not vulnerable to erosion, 19 percent is moderately vulnerable to erosion, and 39 percent is highly vulnerable to loss of soil productivity due to soil depth. Less than 1 percent of the Rudio OHV area is highly vulnerable to erosion. According to the road erosion probability map (Map 25, Chapter 4), about 5 percent of the 18 miles of existing road network in the Rudio OHV area has a high erosion probability. Alternative 1 (the existing condition) and Alternatives 2 and 3 have all of the Rudio OHV area open to motorized OHV use. Alternative 4 has 44 percent of the northwestern area closed to OHV use. The remaining 56 percent of the southern and eastern areas are identified with a "Limited" classification, which means limited to existing trails. Therefore, Alternative 4 is least impacting to detrimental soil impacts and Alternatives 1, 2, and 3 are the most impacting to soils from OHV use. Alternative 5 has a "Limited" to existing trails designation, which puts it in the middle for detrimental soil impacts of all the alternatives. For the alternatives with the open designations, if detrimental soil impacts exceed 15 percent, OHV use should be re-evaluated for the area. For Alternative 5, it is important to monitor the trail use and erosion potential for the areas identified as highly vulnerable to erosion or on the road network with a high erosion probability as identified (Map 25, Chapter 4). For all alternatives, rutting hazard is greatest after snow melt in the spring when soils are saturated or during intense precipitation events in the summer and fall when soils are not frozen.

A form of recreation that is becoming more common in isolated spots of the plan area is Class II motorized rock crawling. Rock crawling occurs on bedrock, where there is little soil. The lichens and moss growing on the rock, and plants growing out of cracks in the rock could be eliminated, especially with increased use. The soils at the base of a climb, staging areas, flat benches or summits would be affected similar to the soils affected by transportation management. Areas open to rock crawling are much greater in Alternative 1 than Alternatives 2-5. Alternatives 2-5 simply designate the isolated areas that are already being used for rock crawling. Therefore, there are very few differences between the alternatives in this aspect.

### **Transportation Management Effects on Soils**

The transportation system has two basic effects on the soil resource. First, it takes land out of vegetation production. Once a road has been constructed, the site has lost much of its soil productivity (potential to grow vegetation). The cut-slopes and road tread lose potential to grow vegetation due to loss of topsoil and compaction respectively, while fill slopes retain some potential for reestablishing vegetation cover. The second effect is the impact of the road on erosion over time. Roads are major collectors and funnels of water. Rock-surfaced roads produce little sediment over time and are easily maintained. Well designed rock-surfaced roads tend to produce less sediment than natural surfaced roads or paved roads. Paved surface roads erode very little from their paved surface, but the smooth paved surface increases water velocities, which erode soils from the ditches and road shoulders. Natural surfaced roads composed of native soil material are responsible for most of the sediment that leaves the road system. Under all alternatives, the majority of roads in the John Day Basin RMP plan area are native surfaced local roads. Map 25 displays those roads with a high probability of being subject to an excess rate of erosion.

Table 4-2 summarizes the direct, indirect, and cumulative effects of the transportation alternatives on soils. Erosion rates are indicated by average annual sediment yield, and alternatives were modeled by Water Erosion Prediction Project (WEPP). Erosion from the BLM transportation network would be 70% lower under Alternatives 2, 4 and 5 than Alternative 3. This difference is due to hydrologic road closures, year-round road closures in the North Fork John Day River area, and planned road rehabilitation. The roads identified for closure and rehabilitation for any alternative are for BLM-managed roads only. Routes designated as open in Alternative 1 are changed to interim designations in Alternatives 2-5.

Cumulatively, erosion from roads in the plan area would be highest under Alternative 3. Alternative 3 would result in 1% less plan area erosion than Alternative 1. Alternatives 2, 4 and 5 would result in 3% less than



**Table 4-2. WEPP Sediment Yield by Alternative.**

Annual Tons of Sediment Produced from the Transportation Network by Alternative  
(Negative numbers indicate erosion eliminated, not totaled)

Road Designation	Alt 1 Sediment (tons/year)	Alt 2 Sediment (tons/year)	Alt 3 Sediment (tons/year)	Alt 4 Sediment (tons/year)	Alt 5 Sediment (tons/year)
Closed Seasonally Other	1.47	1.47	1.47	1.47	1.47
County Road	1,112.23	1,112.23	1,112.23	1,112.23	1,112.23
County seasonally closed for wildlife	6.85	6.85	6.85	6.85	6.85
Forest Service Primary	1,078.35	1,078.35	1,078.35	1,078.35	1,078.35
Forest Service Secondary	10,863.07	10,863.07	10,863.07	10,863.07	10,863.07
Interstate	26.99	26.99	26.99	26.99	26.99
Private	8,756.53	8,756.53	8,756.53	8,756.53	8,756.53
State Highway	296.55	296.55	296.55	296.55	296.55
U.S. Highway	253.97	253.97	253.97	253.97	253.97
BLM Closed	-1.45	-54.83	-54.83	-54.83	-54.83
BLM Closed Seasonally Rehab	0	6.95	6.95	6.95	6.95
BLM Closed Seasonally Wildlife	52.23	143.2	342.56	143.2	143.2
BLM Closed Wilderness Study Area	-150.12	-150.34	-150.34	-150.34	-150.34
BLM Closed Year-round	-239.59	-742.93	-1.72	-742.93	-742.93
BLM Interim Rehab	0	-2.4	-2.4	-2.4	-2.4
BLM Interim Road	796.76	139.5	681.35	139.5	139.5
BLM Not Designated	4.68	0	0	0	0
BLM Proposed New Road	0	4.68	4.68	4.68	4.68
Subtotal Tons of Sediment (BLM only)	854	294	1,036	294	294
Total Tons of Sediment (Cumulative)	23,250	22,690	23,432	22,690	22,690

Alternative 1 (modeled erosion values are displayed in Table 4-2). New roads constructed under all alternatives are designed to meet BMPs and to prevent unacceptable soil erosion and gulying.

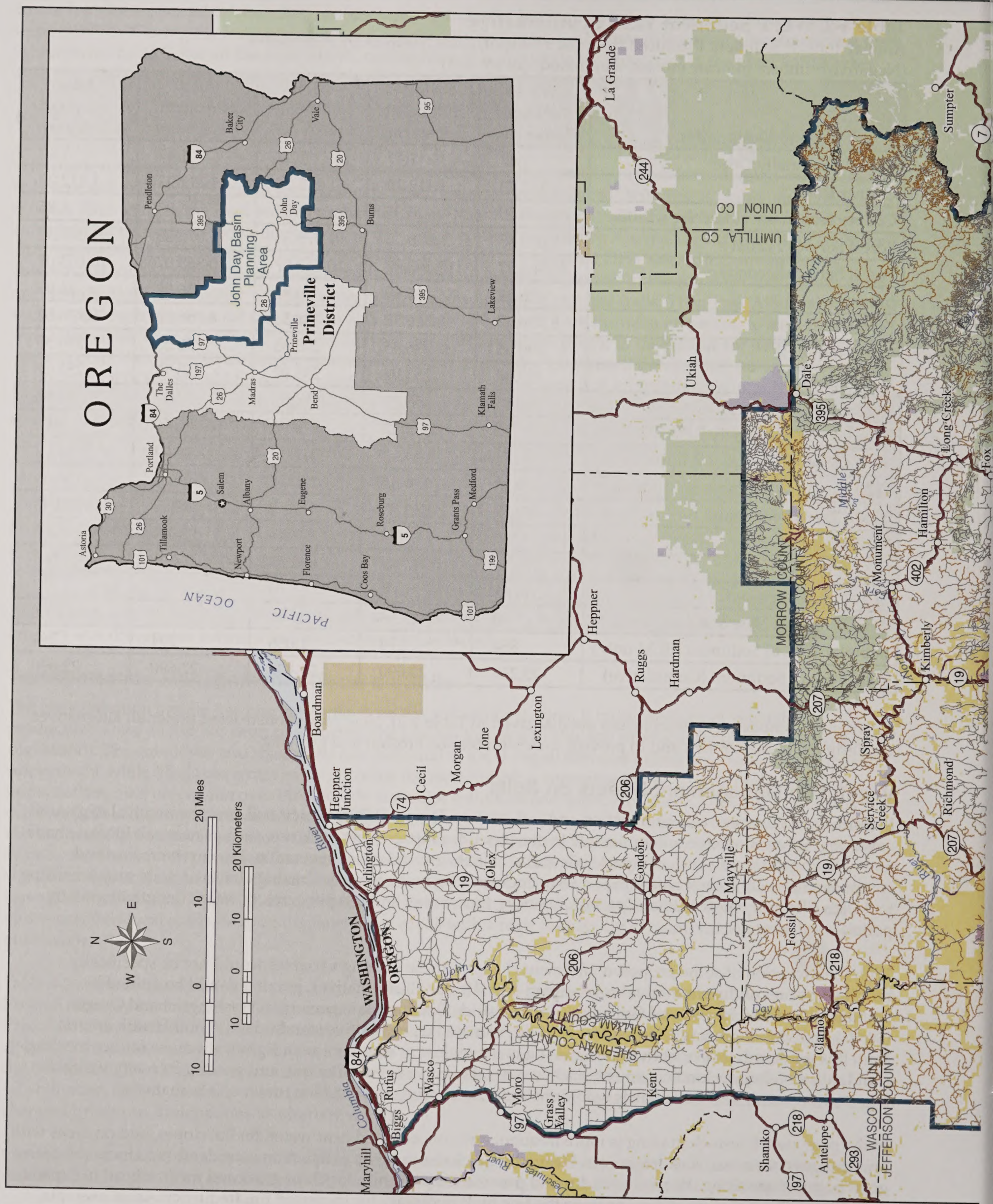
### **Vegetation Management Effects on Soils**

Livestock grazing can cause compaction and soil erosion. Hoof traffic compacts soil, and the removal of ground cover vegetation can leave soil vulnerable to erosion. Concentrated livestock use, such as near salt blocks, shade and watering areas, can both compact soils and eliminate ground cover vegetation. However, erosion and compaction of soils are not absolute to all livestock grazing management. Grazing effects on soils vary according to AUMs (the number of animals grazed), intensity (number of animals per acre), duration (length of grazing period), and season.

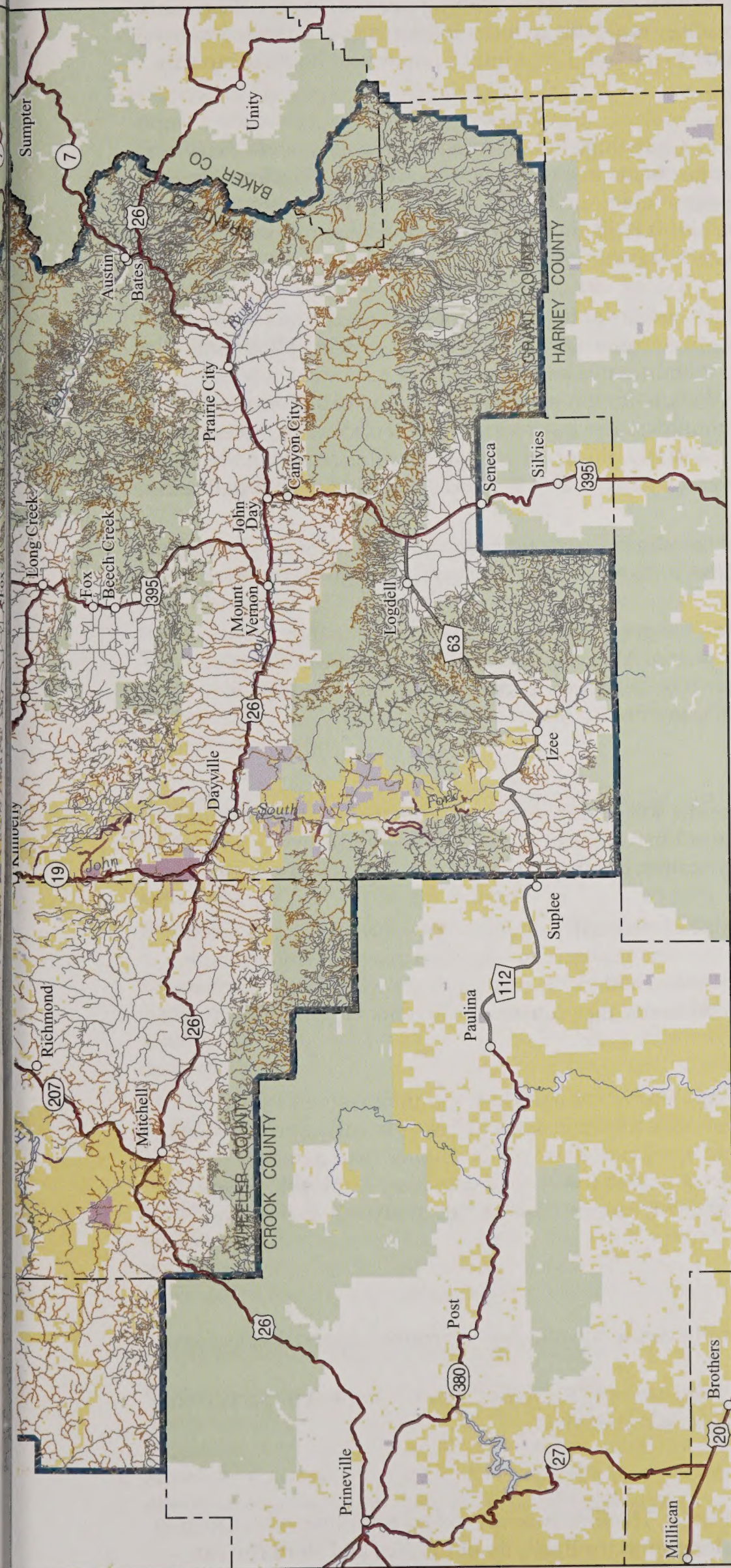
With the exception of some proposed allotment closures, these grazing variables would not be specifically modified by any of the alternatives for the plan area. Under all alternatives, grazing would be guided by Standards for Land Health and Guidelines for Livestock Grazing Management in Washington and Oregon (S&Gs). Individual grazing allotments would be evaluated using the five standards for Land Health criteria from this guidance. If current livestock grazing management or numbers are a significant cause for not meeting standards then livestock management, such as animal numbers, season of use, and grazing intensity would be adjusted. Attaining these standards would maintain or improve soil function under all alternatives.

In the plan area, livestock grazing is more frequent and concentrated near water, on flat slopes, and on areas with low amounts of surface rock fragments. Heavy livestock use and hay production considerably reduces the native grass populations along the river corridor and provides opportunity for cheat grass and medusahead to expand their range. These annual grasses provide the fine fuels necessary for increased fire frequency. As an example,









## LEGEND

— Road With High Probability of Excess Erosion

— Road With Hydrologic Repairs Needed

— Road

\*Note: Roads with a high probability of excess erosion have an average erosion rate of greater than 0.75 pounds of sediment eroding per linear foot of road. BLM administered roads may require a change in road maintenance level.

— Planning Area Boundary

## Administered Land

Bureau of Land Management

Forest Service

John Day Fossil Beds National Monument

Other Federal

State

Private or Other

U.S. DEPARTMENT OF THE INTERIOR  
Bureau of Land Management



## PRINEVILLE DISTRICT

John Day Basin

## Proposed Resource Management Plan Final Environmental Impact Statement

2012

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Map 25: Transportation Erosion Estimates



there were 10 fires from Service Creek to Priest Hole during 2007 (most were lightning caused). Frequent fires maintain these rangelands in a continued early seral state. Over time, this reduces soil function. With the lower root mass of annual grasses contributing less organic matter to the soil, water infiltration, water holding capacity and nutrient cycling are also reduced.

No alternatives propose season-long grazing year after year. Changing climate, forage availability, and other range conditions require frequent grazing management adjustments to ensure compliance with objectives for soils and other resources. Broad seasons of use and AUM levels provide flexibility for annual adjustments in the actual season and amount of grazing authorized. Grazing on the North Fork allotments, like all allotments, would be sustainable, protect soils, and meet Land Health Assessment's Standards and Guides.

As this plan does not propose grazing management changes outside of the North Fork acquired lands, it is anticipated that grazing effects on soils would not differ between alternatives. However, if grazing allotments are relinquished, and ecological conditions are early seral with invasive annual grasses (e.g., cheat grass and medusahead), burn frequencies could increase. This would allow for the possible spread and expansion of these invasive grasses into existing native shrub and grass communities. The low root mass of the annual grasses in a terminal steady state would gradually reduce soil function over the life of the plan. Under this scenario, loss of soil function from least to greatest is: Alternative 1, followed by Alternatives 3, 4 and 5, and finally Alternative 2.

Relinquishing allotments with mid to late seral vegetative communities would have different impacts. The lack of livestock use would allow the native vegetative communities to move toward later seral ecological conditions.

Later seral ecological communities normally have higher native grass to shrub and tree ratios that increase the fine root mass from native grasses, and increase soil function. Also, the lack of livestock use would reduce trampling compaction on soil close to water sources. Under this scenario, loss of soil function from least to greatest is Alternative 2 followed by Alternatives 3, 4, and 5, and finally Alternative 1.

## **Wildlife Effects on Soils**

The effects of antelope, deer, elk and wild horse grazing on the soil resource are similar to the impacts of domestic livestock. Concentrated trampling and intensive use can result in compaction, reduced vegetative cover and ultimately erosion and loss of soil function. Presently, only scattered trampling and erosion problems occur.

There is a risk, however, that anticipated increases in the size of elk herds, regardless of alternative, could result in accelerated erosion on fragile, non-forested portions of the winter ranges managed to provide winter forage. These areas were severely eroded during the early years of sheep and cattle grazing. Since wildlife populations are influenced by habitat conditions both on and off BLM lands and the plan area, differences in soil impacts as a result of the alternatives are likely to be negligible.

Seasonal road closures to improve wildlife winter habitat conditions and to reduce the animal stress from people would reduce rutting from vehicle use of the transportation system. Closing roads in early spring when conditions are too wet for driving would reduce rutting and erosion of these roads. Higher road densities result in increased soil compaction and greater loss of soil productivity than lower road densities. The resulting soil compaction and loss of soil productivity are least in Alternative 1; intermediate in Alternatives 2, 4, and 5; and greatest in Alternative 3.

## **Wild Horse Management Effects on Soils**

Under Alternatives 2-5, wild horse management is specifically tied to meeting soil detrimental impact objectives.

The detrimental soil impact objectives are not included in Alternative 1. Therefore, detrimental soil impacts from wild horse management would be less in Alternatives 2-5 than Alternative 1.

## **Fire Management Effects on Soils**

Fire management activities affect the soil resource in three ways. The first, machines used for piling slash compact and displace soil; second removing woody debris reduces long-term productivity of the site; and third fire can



directly alter the chemical and physical soil properties. Machine piling is the leading cause of soil compaction in forested areas, based on Malheur National Forest monitoring results.

Prescribed fire has short- and long-term effects on soils. Immediate effects result from the loss of protective organic matter (i.e., live and dead vegetation), disturbance of biological crusts, and changes in the physical and chemical characteristics of the soil surface. These effects vary according to the fire intensity and duration. High fire intensity or duration may cause some soils to become hydrophobic (water repellent), which impedes infiltration and increases surface runoff. However, some coarse textured sandy and pumice soils are naturally hydrophobic. Volatilization of nutrients may cause additional long-term loss of site productivity. Germination, vigor, and spread of some noxious weed species and introduced annuals are more pronounced following fire. Fire applied in inappropriate locations, such as warm and dry sites or sites with south aspects and high annual to perennial grass ratios, can allow undesirable plant species to increase and spread. Fire's effects on soils may be greater on sites with undesirable plant species (annual grasses) than on sites where healthy native vegetation is present.

One consequence of not applying mechanical or prescribed fire fuels treatments could be an increase in large, high-intensity wildfires. These hot burning fires (>300 °C) can dramatically reduce soil productivity through volatilization of nutrients and surface organic matter. The short- and long-term loss of watershed cover can also increase erosion rates (see Fire Management effects).

Juniper invasion is increasing throughout the plan area (see Appendix F). With this increase in juniper density, it is expected that Alternative 1 would have the greatest potential for stand replacement wildfires. The increased mechanical treatments proposed in Alternatives 2 through 5 would reduce the wildfire potential, but would have effects similar to those described in the vegetation management section on detrimental impacts to soils. The effects of these vegetation treatments would be most intense around communities within the first band of the wildland urban interface (see Fire and Fuels section, Chapter 2). Best management practices, adaptive management, and monitoring are expected to reduce or minimize the detrimental effects on soil productivity from these actions.

## **Mining and Energy Development Effects on Soils**

Mining exploration and development can dramatically reduce soil productivity and soil function, with the extent of effect depending on the intensity and amount of activity. Of all the types of mineral extraction, surface mining causes the greatest loss of soil function and productivity. This type of mining generally involves removing the productive surface soil to access the ore-bearing substrata below. Underground mining impacts less surface area.

Resource and resource use protections applied to mineral use include mineral withdrawals, requirements for no surface occupancy, avoidance areas, stipulations and BMPs. Following the BMPs (such as requirements for surface rehabilitation of a comparable area of disturbance) would keep the disturbance area small, which improves long-term soil function. Stipulations requiring two years of follow-up monitoring of erosion control measures and revegetation success increase soil productivity. These increased protections from surface mining activities result in greater soil productivity and soil function under Alternatives 2-5 than in Alternative 1.

With increased interest in wind power generation, the road and power line infrastructure needed to develop this technology would be expected to increase. Disturbed soil areas around wind towers and along power line roads would further reduce perennial native vegetative cover increasing the amount of soil area exposed to wind and water erosion. Also, the new corridors opened up to wind power would provide more opportunities for off-road OHV use that could further destabilize soil areas prone to erosion.

## **Effects of All Alternatives on Soils**

Using adaptive management with a concerted effort for finding the most effective best management practices for minimizing detrimental soil impacts is essential to implementing a successful plan. Of the proposed alternatives, Alternatives 4 and 5 are the most favorable to soil function followed by Alternative 2. Alternative 1, the No Action Alternative, is most impacting of all alternatives, followed by Alternative 3. Table 4-3 summarizes the cumulative effects of the alternatives on soil function for this plan.



Table 4-3. Comparison of Alternatives Effects on Soils.

Resource Use	Alternative				
	1	2	3	4	5
Recreation Non-motorized		●	●	●	●
Recreation Motorized		○	○	●	●
Transportation		●		●	●
Timber/Compaction		●	●	●	●
Grazing (areas in good range condition)		●	○	○	○
Grazing (areas with invasive plants)	●				
Road Density Standards		○	○	●	○
No Road Density Limit		○	○	●	●
Wild Horse Management		●	●	●	●
Wildfire Risk		●	●	○	●
Mining		●	●	●	●

● represent the alternatives that best address soil productivity and function for a specific resource use.

○ represent the alternatives determined to have relatively the same effects as those rated best.

## Cumulative Effects

Cumulative effects on soils would occur over time with the combined effects of all of the activities described above; both within the planning area and on all ownerships outside the planning area but within the same watershed. Ground-disturbing activities and fire occurring upslope could contribute to cumulative changes in hydrologic function, including erosion, stream sedimentation, and water quality occurring within and downstream of the planning area. The net result to soils could be further compaction, physical losses of soil, changes in soil structure, and potential long-term losses of soil fertility, as described above. With better managed public uses, rehabilitation, and natural recovery processes as described above, these cumulative effects would be moderated and stabilized over time.

## Carbon Storage and Greenhouse Gas (GHG) Emission

The analysis below focuses on carbon storage and greenhouse gas emissions (GHG), such as carbon dioxide and methane that may occur as the result of planning decisions set forth in this RMP. Analysis of dust and smoke effects associated with vegetative treatments, travel, and recreation activities are included the Air Quality section.

### Carbon Storage and GHG Emission Indicators

- **Acres of each vegetative type.** The number of acres is an indicator of the amount of carbon stored in live and dead vegetation, litter or duff, and soil.
- **Acres burned by prescribed fire.** The number of acres proposed to be burned is an indicator of the amount of carbon dioxide that would be released.
- **Acres cut or mowed for fuels treatment, wildlife habitat improvement, timber production, and other reasons.** The number of acres proposed for cutting is an indicator of the amount of carbon stored in wood products, and of the GHG emissions from timber equipment operation and hauling.
- **Miles of interim routes.** The amount of carbon emissions from motorized travel is assumed to be proportional to the miles of routes available.
- **Area Open for motorized use off road.** The amount of carbon emissions from off road motorized use is assumed to be proportional to the acreage of land allocated for "Open" use.
- **Number of AUMs.** The release of methane from livestock grazing is indicated by the AUMs available.



## Carbon Storage and GHG Emission Assumptions

This analysis focuses on the alternative components where the amount of carbon stored or released can be estimated, including:

- prescribed burning
- mechanical vegetative treatments (including timber harvest)
- motorized recreation
- livestock grazing

Analysis based on assumptions does not provide exact figures, but it does allow a comparative examination of the effects of the alternatives.

This analysis considers the role of natural processes and human actions in the carbon cycle. The carbon produced each year as vegetation biomass in the planning area is assumed to have one of the following fates:

- Storage in the ecosystem in the form of perennial plant biomass (e.g., roots, woody material) or soil organic carbon;
- Storage in products (e.g., house framing, furniture);
- Return to the atmosphere as carbon dioxide, either through plant and animal respiration, decomposition of plant biomass, and especially through consumption of plant material in wildland fire; or
- Return to the atmosphere as methane gas, through fermentation as rotting biomass or from the digestive system of ruminant animals (e.g., cattle).

This analysis assumes prescribed fires consume 40 percent of the acres in each burn unit. Within that burned area, 100 percent of the shrubs, grass, litter, needles and bark are consumed. The trees themselves rarely burn, but they often die from the heat, loss of needles and bark, or both. If the trees are on the ground and dead, 50 percent of them will be consumed in the fire. About 75 percent of prescribed burns on the BLM lands are on juniper sites with live trees, and the remaining 25 percent are on juniper sites with dead and down trees. Forestland burns generally involve live trees or no trees (trees removed from the site during harvest). Burning creates carbon dioxide emissions at a rate of 3.7 tons of carbon dioxide per ton of carbon.

The primary source of carbon dioxide emissions from cutting and mowing vegetation is from the fuel use associated with treatment. Most of the carbon "treated" is left on site where it will decay slowly over time. A portion of the carbon in forest acres is converted to lumber (2,540 board feet per acre harvested) and stored off site. Lumber "decays" through burning (sawdust or waste) or decay at an average 0.6 percent per year. Some juniper cut on rangelands will be used for fuel or furniture, but the amount is low and difficult to estimate. Most of the vegetation on treated acres will remain on site and decay over time; some will be consumed by wildfire or prescribed burns at a later date. The average annual accumulation and emission of carbon by vegetation is presented in Chapter 3, Carbon Storage. There is considerable variation in and scientific controversy about the rate of accumulation in recently cut or burned areas. The difference in carbon decay rates on site and off site (in lumber) result in very small differences in carbon emissions, masked by carbon accumulations in the remaining vegetation. The analysis in Chapter 4 does not attempt to measure these variations; instead it assumes a static rate of accumulation/emission across the planning area.

Annual fuel consumption associated with each 100 acres of timber harvest is assumed to be about 150 gallons of diesel fuel on site (50 gallons a day for 30 days), and an additional 100 gallons diesel fuel for hauling lumber to the mill (estimate 5 trips of 100 miles each at 5 miles per gallon). Annual fuel consumption associated with each 100 acres of rangeland cutting, moving or burning is assumed to be about 25 gallons per day for 10 days. Fuel use for burning forestland is assumed to be similar as for burning rangeland. Vehicles convert gasoline to greenhouse gasses, primarily carbon dioxide, but also methane and nitrous oxide, at a rate of 0.0092631 metric tons carbon dioxide equivalent<sup>1</sup> per gallon.

<sup>1</sup>The term "carbon dioxide equivalent" is used to allow comparison of other greenhouse gases to an equivalent amount of carbon dioxide. For example, methane has a global warming potential 21 times that of carbon dioxide.



While prescribed burns, cutting and mowing produce carbon dioxide, so too would the wildfires (and wildfire suppression activities) these vegetative treatments can help prevent. However, wildfires are variable and it is impossible to predict when or where they will burn, so this analysis does not measure the effects of wildfire.

Motorized travel by recreationists on BLM dirt- and gravel-surfaced roads, trails, and open areas results in gaseous emissions from fuel combustion. As more roads or areas are available, one could assume that more use occurs in the planning area. The analysis below assumes that each route in the interim transportation plan is driven once each day on average; each 1,000 acres "open" to off road use receives one mile of use per day; and vehicles get 20 miles per gallon on average to allow a relative comparison between alternatives.

Ruminant animals, including domestic cattle and sheep, produce methane as a byproduct of their normal digestive process. Methane emission rates from cattle vary widely and depend on many variables. Estimates for grazing cattle typically range from 6.7 to 9.2 kilograms of methane per month per animal (EPA 2009). Since the BLM does not have data on the actual emissions for this area, this analysis assumes a methane emission rate of 8 kilograms of methane per animal unit month (AUM), which is an average of the estimates cited from EPA, above. Since methane has a global warming potential 21 times carbon dioxide (EPA 2009, p. ES-3), each AUM results in 0.168 metric tons of carbon dioxide equivalent.

Most lessees' base property is adjacent to the allotment they graze, requiring no hauling; therefore hauling costs are not included in the analysis. The amount of methane, or carbon dioxide equivalent, is estimated based on available AUMs. As with prescribed burning, the net contribution to carbon storage versus carbon emission from livestock grazing is complicated because as the grass regrows after grazing, carbon accumulates faster in the new growth and in the soil. This contribution to carbon storage is not accounted for in this analysis. While wild ruminants such as deer, pronghorn and elk also produce methane emissions, these were not included in this analysis because the number of wild animals in the planning area has not been quantified, and the effect would not vary by alternative.

The effects of other actions proposed in the alternatives are not analyzed in detail here because there would be no emissions, the expected emissions are so small as to be negligible, or the potential for the action is low. No carbon dioxide emissions would result from non-motorized recreation uses, changes in land tenure, management to protect wilderness characteristics, or closures to firearm discharge. The potential for energy and mineral development in the planning area is low, and the area available for these uses varies little between alternatives. Therefore, there is little basis for comparison between alternatives, and that analysis is not attempted here.

## Analysis of the Effects of the Alternatives on Carbon Storage and GHG Emission

Table 4-4 summarizes the effects each alternative would have on carbon emissions, as described in further detail in the rest of this section. The amounts are expressed in tons of carbon dioxide or equivalent stored or released each year. The total contribution of planned activities to GHG emissions would be greatest in Alternative 1, with the annual emission of 25,715 tons of carbon dioxide equivalent. Emissions from actions in the Preferred Alternative (2) would be 22,093, which is under the 25,000 ton limit set by the EPA for reporting under the Clean Air Act. Alternative 2 emissions would be about 0.04 percent of the total emissions statewide. Emissions for the entire state are 70 million tons of carbon dioxide equivalent each year (Oregon Global Warming Commission,

**Table 4-4. Annual Contribution to Greenhouse Gas Emissions (in tons of CO<sub>2</sub> or equivalent) of Planned Actions on BLM-managed Public Lands.**

Action	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Prescribed burning	20,934	20,934	20,934	20,934	20,934
Mechanical treatments	42	160	160	160	160
Recreation and travel	178	62	161	61	61
Livestock grazing	4,561	937	1,924	1,828	1,900
Total	25,715	22,093	23,179	22,983	23,055



2009), and nationwide emissions are 7 billion tons (EPA 2009). For perspective, the average U.S. household produces 38.3 tons of carbon dioxide from home energy use, driving, flying, and food.

### **Prescribed Burning Effects on Carbon Storage and GHG Emission**

All alternatives propose the same amount of prescribed burning: 400 acres of forestland and 2,500 acres of rangeland each year.

There are 55.6 tons of carbon per acre in forests and 9.5 tons per acre on rangelands, as stated in the Chapter 3 carbon storage section. This includes live and dead trees and other vegetation, including litter and duff.

The biomass consumed by the proposed burns would result in the direct emission of 17,575 tons of carbon dioxide on rangelands, and 3,292 tons of carbon dioxide on forests per year. Fuel use for these 2,900 acres of prescribed burns would be 7,250 gallons, producing 67 tons of carbon dioxide. Total emissions for these treatments would be 20,934 tons of carbon dioxide per year.

### **Mechanical Treatment Effects on Carbon Storage and GHG Emission**

Alternative 1 would cut/mow 500 acres of rangeland and cut 200 acres of forest land, annually. Trees cut from forest land would continue to store carbon, but now off site in lumber rather than on site in live and dead trees. Fuel consumed annually during harvest of forest land and hauling of timber products would produce 30 tons of carbon dioxide. Cutting/mowing 500 acres of rangeland would leave the carbon on site but would emit 12 tons of carbon dioxide annually as a result of fuel use during treatments. Total emissions for the forest and range treatments in Alternative 1 would be 42 tons of carbon dioxide per year.

Alternatives 2-5 would treat the same amount of rangeland acres, resulting in the same amount of carbon dioxide release. These alternatives would treat 1,000 acres of forest land, as opposed to only 200 acres in Alternative 1. Total emissions for the forest and range treatments in Alternatives 2-5 would be 160 tons of carbon dioxide per year.

### **Recreation and Travel Management Effects on Carbon Storage and GHG Emission**

For Alternative 1, an estimated 13,542 gallons of fuel are used annually on the 742 miles of routes, and 4,271 gallons of fuel are used annually on the 234,272 acres "open" to motorized use, for a total of 17,813 gallons of fuel per year. Therefore, the tons of carbon dioxide emitted annually under Alternative 1 would be 178. Motorized use would release more carbon dioxide to the atmosphere in Alternative 1 than in the other alternatives. The tons of carbon dioxide produced annually by motorized use in Alternatives 2, 3, 4, and 5 would be 62, 161, 61, and 61, respectively.

### **Livestock Grazing Management Effects on Carbon Storage and GHG Emission**

The AUMS available in Alternatives 1-5 are 27,148; 5,578; 11,454; 10,883; and 11,308, respectively. Assuming the AUMs available are an indicator of methane emissions, and one ton of methane is the equivalent of 21 tons of carbon dioxide, emissions would be greatest in Alternative 1 (the equivalent of 4,561 tons of CO<sub>2</sub>) and least in Alternative 2 (937 tons of CO<sub>2</sub>).

### **Cumulative Effects on Carbon Storage and GHG Emission**

The types of actions generally attributed to increased atmospheric GHG emissions are discussed in Chapter 3. Current scientific research has not confirmed a direct link between any particular emission of GHG and global climate change. As noted in the Incomplete or Unavailable Information listed above further research is necessary to make direct, indirect, or cumulative effects determinations.

Actions on BLM-managed public land within the planning area produce between 22,093 (in Alternative 2) and 25,715 (in Alternative 1) tons of carbon dioxide (or equivalent) each year, primarily as a result of prescribed burns, vegetative treatments, recreation and travel, and livestock grazing (summarized in Table 4-4). Assuming a similar rate of emissions on the nearly 5 million acres of non-BLM lands in the planning area, actions on these lands would produce 248,183 tons of carbon dioxide equivalent. The combined emissions from all lands within the planning area would be 270,276 tons of carbon dioxide equivalent in Alternative 2. This is 0.4 percent of Oregon's total emissions.



# Air Quality

## Introduction

Analysis of the environmental consequences of the alternatives on air quality considered the following key resources or resource uses: Vegetation (noxious weed control, vegetation treatments), Fire and Fuels (wildland fire), Energy and Mineral Resources, Recreation Opportunities (motorized uses), and Travel Management. The analysis below focuses on dust and smoke, which are the primary influences on air quality. For analyses about gaseous emissions (e.g., carbon dioxide and methane), see the Carbon Storage and Greenhouse Gas Emissions section. Indicators used to compare environmental consequences between alternatives include: acres burned, miles of road, and acres of land available for mineral development.

## Air Quality Indicators

- **Acres burned.** The number of acres burned is an indicator of the amount of smoke particulate matter released. Forested ecosystems that contain more overall biomass are assumed to yield more smoke than the more lightly vegetated rangelands and shrub-steppe ecosystems (Anderson *et al.* undated). The plan is strategic rather than specific and, therefore, the total annual emissions from burning of piles, underburning, and broadcast application of fire is not directly measurable, but is indicated by acres of treatment proposed.
- **Miles of road and motorized trails.** The amount of fugitive dust from roads would be proportional to the miles of the roads. Most BLM roads are native or gravel surface, which can produce dust.
- **Area Open or Limited for OHV use.** The amount of dust from OHV use is assumed to be proportional to the acreage of land allocated for OHV use.
- **Acres of land available for mineral development.** The amount of fugitive dust for mining operations would be proportional to the availability of land for mineral development.

## Air Quality Assumptions

- Sources of air pollutants for all alternatives in this plan are limited to smoke from wildland fire and prescribed burning, herbicide applications, and dust from use of unsurfaced roads as well as road construction activities.
- Wildfires in rangeland are assumed to continue at their current frequency, intensity and duration on average. Wildfires in forestlands are predicted to increase in frequency, intensity, and duration as the climate continues to change. However, it is not known when these changes will occur or how they will play out over the plan area.
- While other sources of emissions (i.e., from road construction, maintenance and use, mining, travel, and farming) are locally important, fire use could degrade regional or airshed air quality.
- Smoke emissions from large late-summer prescribed burning will generally dissipate to the south of the plan area, in the direction of the most common winds. Prevailing winds are north-northwest in the summer and early fall months and are southerly for the rest of the year.
- Smoke management strategies will be coordinated with state and local authorities as fire is used more frequently to preserve, restore, or maintain forest and rangeland health and reduce hazardous fuels, primarily in the urban interface. All smoke emissions are coordinated through the Oregon Department of Forestry under the Oregon Smoke Management Plan (SMP). The SMP now covers the entire state for forested lands. Prescribed fire on forested BLM lands in the plan area will follow the SMP. Rangeland burning is not covered by the SMP.
- Smoke from prescribed burning competes with smoke from agricultural burning, residential wood consumption, and smoke from neighboring agencies relative to smoke limits. Wildfires from within the plan area and also upwind sources on other ownerships will continue to contribute sporadic smoke impacts in the summer months. Many of the smoke impacts to the area come from field burning to the north and west and from wildland fires on the Malheur, Ochoco, and Umatilla National Forests.
- None of the alternatives propose changes of a magnitude that would violate the Clean Air Act.



## Analysis of the Effects of the Alternatives on Air Quality

### Effects Common to All Alternatives

Proposed management of the following resources or resource uses would not have impacts to air quality: Aquatic Resources, Wild Horses, Lands with Wilderness Characteristics, Cave Resources, Visual Resources, Special Designations, Native American Uses, Paleontological Resources, Cultural Resources, Livestock Grazing, and Lands and Realty.

All of the alternatives would treat the hazardous fuels in the Wildland Urban Interface (WUI) as identified in Community Wildfire Protection Plans (CWPPs). This would have the effect of producing particulate matter, but since all burning activities would comply with the Oregon State Smoke Management Plan and the Clean Air Act, no air quality effects would be expected to exceed the National Ambient Air Quality Standards (NAAQS).

Burning would occur in the uplands away from the populated areas for vegetation management objectives (see Vegetation section, Chapter 2). While the preferred disposal of hazardous fuels is use as commercial product or biomass energy sources, burning would be done where those options are not feasible due to access or economic factors. Areas in conifer forest environments are more likely to contain piles for burning than rangeland ecosystems. Piles would be burned in the spring or fall after some precipitation has been received to limit the potential for fire spread, but while the larger material in the piles is still dry enough to burn. Dry fuels burn cleaner and hotter than wet fuels; therefore, less smoke is produced. All burning would be done under desirable weather conditions to meet objectives for risk reduction and fuel consumption, and to minimize smoke impacts to the populated areas and protect visibility in Class 1 areas. (The Strawberry Wilderness is the nearest Class 1 airshed.) Despite mitigation measures to reduce impacts, smoke would still be visible and could cause a temporary localized exceedence of particulate matter standards or result in impaired visibility.

### Vegetation Management Effects on Air Quality

Mechanized activities associated with vegetation treatments would create dust and gaseous emissions from road construction, use of heavy equipment, and timber hauling. Dust would settle within a short time period and stay close to the point of origin. Since the average annual amount of mechanical vegetation treatments increases from 700 acres under Alternative 1 to 1,500 acres under Alternatives 2-5, Alternative 1 would have less gas and dust emissions than Alternatives 2-5.

Herbicide use for noxious weed control would be similar between alternatives. Herbicide use is highly localized and constrained by BMPs to control drift, so there would be no substantial difference in herbicide drift between alternatives.

### Fire and Fuels Management Effects on Air Quality

Smoke emissions (including greenhouse gases, see Chapter 3) from wildland fires are a short-term event, mainly restricted to the active burning phase of the event. Rangeland fires are typically hot, rapid events in which most of the fuel consumption and smoke production occurs with the passage of the flaming front, and very little smoldering occurs after the fire due to the lack of duff and large fuels. Woodland, shrubland, and grassland fuels have a relatively short residual burning period. The length of time that smoldering combustion continues is measured in hours, rather than days or weeks as in forested vegetation types (Anderson *et al.* undated, Keane *et al.* undated).

Under Alternative 1, there are 2,900 acres per year proposed for prescribed burning (Table 4-5). Alternatives 2-5 also propose to burn approximately 2,900 acres a year with an additional 1,500 acres of unplanned ignitions managed to achieve resource and protection objectives. The number of acres burned per year (Alternatives 2-5) could be larger or smaller than suppression (Alternative 1). The actual magnitude of change would not be known until the direction is implemented and has time to "mature."

Managing unplanned ignitions to achieve resource and protection objectives could increase smoke emissions above those generated by response efforts. In the long term, however, additional acres burned through this strategy could also result in less stand-replacement wildfire. Reductions in stand-replacement wildfire would result in a net decrease in emissions under Alternatives 2-5, compared to Alternative 1.



Under Alternatives 2–5, managing unplanned ignitions to achieve resource and protection objectives could emit smoke longer than planned ignitions, depending on the vegetation types involved. Alternatives 2–5 have the potential to violate NAAQS. These violations are more likely to occur in severe burning conditions with multiple large fires burning across multiple jurisdictions. Longer duration fires would result in longer periods of time when smoke may limit visibility and elevate levels of particulate matter. Severe wildland fires would result in greater direct, short-term emissions due to large volumes of smoke. Indirect impacts from severe fires could stem from reduced or eliminated vegetation cover, exposing the underlying soil to wind and water erosion, which would in turn increase levels of dust during wind events. Although treatment efforts to reduce fuel loads would result in some direct but minor impacts to air quality, decreasing the potential of catastrophic wildfire would reduce particulate matter emissions over the long term. If the use of appropriate response on approximately 1,500 acres per year under the action alternatives results in fewer large fires, in the long term it would likely result in greater air quality than Alternative 1.

Smoke emissions from specific unplanned ignition and prescribed burn projects are managed under project-specific smoke management plans. Moderate amounts of smoke could be experienced in the immediate vicinity of treatment areas. However, the smoke would be a short-term emission, as most of these activities would take place to the east of populated areas and would be executed under conditions that would carry smoke eastward. Smoke mitigations from smoke management plans are similar across all alternatives.

The geographic area of analysis for cumulative impacts to wildland fire is the plan area and adjacent lands. Wildland fires in the region would continue to periodically contribute particulate matter to the airshed. Drought can increase the available fuel loadings in forests and some woodlands, thereby increasing potential fire intensity and fire size, the amount of biomass consumed, and therefore the particulate emissions. The Ochoco, Malheur, and Umatilla National Forests are increasing the annual acres burned in response to the National Fire Plan. Fuel treatments and unplanned ignitions managed to achieve resource and protection objectives and to move the landscape toward desired condition anticipated over the life of the plan, in conjunction with concurrent anticipated community hazardous fuels reduction projects and BLM actions are expected to increase total emissions in the short term with an expected long-term reduction in the total volume of wildland fire emissions as fuel breaks become more common and the probability of smaller fires increases. BLM action, in combination with other regional actions, would not cumulatively exceed the thresholds of the Clean Air Act standards because actions would be carried out in compliance with the State Smoke Management Plan.

### **Minerals Management Effects on Air Quality**

Areas available for mineral leasing, sale or location would have effects on air quality. Sources such as construction, mining, and processing operations emit dust. Fuel consumption contributes gaseous emissions. Emissions of dust and gases would be greater under Alternative 1, where 74% of BLM lands are available for minerals, than under Alternatives 2–5, where 67% is available.

### **Recreation Management Effects on Air Quality**

The OHV travel by residents and recreationists on BLM dirt and gravel-surfaced roads, trails and open areas causes dust emissions. Within areas with a Limited designation, OHV use occurs on designated trails. In Open OHV designation areas, repeated use or use on sparsely vegetated rangelands may also produce dust, such as in the Little Canyon Mountain area. Alternative 1 has 98% more area of Open OHV designation than Alternatives 2–5. Therefore, Alternatives 2–5 would have fewer emissions of dust and gas from OHV use than Alternative 1.

### **Travel Management Effects on Air Quality**

Use of the interim and final transportation network by motorized vehicles would result in dust emissions. During the summer months, dust is produced from both public and administrative use of unpaved roads. Alternative 1 has 742 miles of interim routes; Alternatives 2, 4, and 5 have about 333 miles of interim routes; and Alternative 3 has 879 miles of interim routes, including 137 miles previously closed routes in the North Fork. Therefore, emissions of dust from the transportation network are assumed to be greatest under Alternative 3, less under Alternative 1, and least under Alternatives 2, 4, and 5.



## Cumulative Effects to Air Quality

Wildland fires in the region would continue to contribute particulate matter to the airshed periodically. Increasing recreational use would increase the probability for airborne dust related to travel on dirt and gravel-surfaced roads. The National Forests to the south and east and northeast of the planning area are increasing the annual acres burned in response to the National Fire Plan. Wildland fire, vehicle emissions, wood heat smoke in rural communities, and fugitive dust all contribute to the degradation of air quality. However most of the emissions would be spread out over time and distance. Prescribed fire emissions are regulated by Oregon State Smoke Management Plan to minimize air quality effects on communities. There is potential for multiple wildfires in the planning areas and lands adjacent to the planning area to cause short term degradation to air quality in the planning area. The fuel treatments anticipated over the life of the plan, in conjunction with concurrent anticipated community hazardous fuels reduction projects, would be expected to eventually reduce the total volume of summer wildfire emissions as fuel breaks become more common and the probability of stopping fires increases. There is a potential for increased fire emissions in the future if temperatures go up and wildfire season is lengthened due to climate change.

## Vegetation

### Introduction

Analysis of the environmental consequences of the alternatives on terrestrial and riparian vegetation considered the following key resources or resource uses: Vegetation, Fire and Fuels, Aquatic Resources, Lands with Wilderness Characteristics, Visual Resources, Special Designations, Livestock Grazing, Recreation Opportunities (OHV use), Energy and Minerals, and Lands and Realty.

Effects to vegetation depend on the amount, type, location, and method of treatments allowed and the resultant vegetation community characteristics. When effects analysis requires more than a general discussion of vegetation management, Biophysical Settings (BpSs) were lumped into the following similar functioning groups: Grassland, Shrubland, Forestland, Juniper Woodland, Riparian, and Potential Restoration Needs. Individual BpS analysis and a key to their general functional groups are contained in Appendix F.

### Vegetation Indicators

Indicators used to compare environmental consequences on vegetation conditions between alternatives include:

- **Percent of treatment need met based on ARV.** Treatment need met is used as an indicator of the level of attainment of ARV objectives. Managing vegetation within site capability reduces the amount of uncharacteristic disturbance, provides spatial distribution to allow genetic exchange, and ensures that vegetative species compositions and structures exist in sufficient quantities to provide resiliency when disturbance does occur.

For analysis purposes, the current treatment need identified to reach ARV is assumed to provide a relative amount and type of treatment needed over the longer term. These are not prescribed treatment numbers, but are being used to display likely treatment types and amounts for the purpose of effects analysis. Yearly budgets and personnel availability, weather, and refinements in site-specific data may result in a variation in acres implemented yearly or in total, but the types and relative amount of treatment should be consistent. Due to this variability, the following analyses represent outcomes of treatment averages by alternative (Table 4-5).

- **Location and type of treatment – prioritization criteria.** Targeted vegetation treatments across the landscape are more likely to alter seral structural conditions in areas and methods necessary to better achieve ARV objectives across the landscape. Targeting treatments will also increase the likelihood that vegetative conditions will respond to natural disturbances in sizes and intensities that will retain or enhance seral structural compositions and facilitate moving those conditions furthest out of balance into ARV.
- **Fire Regime Condition Class (FRCC).** FRCC is a measure of vegetation condition as it relates to natural disturbance or fire regime. FRCC provides a sense across the landscape of how departed vegetation



Table 4-5. Annual and 30-year vegetation treatment assumptions by alternative.

Treatment Type	Alternative 1		Alternatives 2-5	
	Rangeland* Annual Acres Treated (30-year total **)	Forest Annual Acres Treated (30-year total)	Rangeland Annual Acres Treated (30-year total)	Forest Annual Acres Treated (30-year total)
Prescribed fire	2,000 (60,000)	300 (9,000)	2,000 (60,000)	300 (9,000)
Mechanical	500 (15,000)	200 (6,000)	500 (15,000)	1,000 (30,000)
Maintenance***	500 (15,000)	100 (3,000)	500 (15,000)	100 (3,000)
Appropriate Response****			1,500 (45,000)	
Yearly Totals	3,000	600	4,500	1,400
30-Year Totals	90,000	18,000	135,000	42,000
Current Need	146,746	50,977	146,746	50,977
% of Current Need Met in 30 Years	61%	35%	92%	82%

\*Rangeland = grass, shrub, and juniper woodlands (See Appendix E – BpS summary and Appendix F – BLM BpS analysis and grouping).

\*\*Numbers in parenthesis are yearly averages projected for 30 years.

\*\*\*Maintenance will be prescribed fire entries following the first prescribed fire entry.

\*\*\*\* This is an estimate that may vary considerably from year to year. The frequency and occurrence of lightning in a given year cannot be predicted.

conditions are from historic conditions relative to the expected type, intensity, and spatial distribution of fire and other disturbances.

- **Old growth.** Future treatments are more likely to retain old growth trees when clear definitions and management direction are provided. Identification of appropriate locations (Biophysical Settings) where old growth juniper would naturally occur increases the potential for long term sustainability of these conditions. Due to the time necessary to generate old growth characteristics and stands, the protection and management emphasis on these characteristics is necessary to ensure that ARV objectives for large structure and late seral conditions are attained.
- **Acres available for forest product production.** The potential to utilize forest material as a source of funding to offset treatment costs will allow greater amounts of treatment to be completed. Utilizing forest material will also reduce fuel loadings and increase the potential that wildland fire to achieve resource objectives could be implemented and meet vegetative objectives.
- **Area and type of riparian management objectives.** Restrictions applied within riparian areas influence the ability to treat vegetation. Without treatment, overstocking and shade-tolerant species can dominate sites and reduce the amount of early to mid-seral conditions that occurred under Pre-European disturbance levels.
- **Area available for Appropriate Response or full suppression.** Suppression of fires over the last 100+ years has resulted in species composition and fuel load changes. The ability to manage wildfires under specific conditions allows for greater amounts of area where adjustments to species composition and fuel loadings can be treated.
- **Acres of VRM Class I or II and Area of Critical Environmental Concern/Research Natural Area (ACEC/ RNA).** Lands with these designations reduce the amount or tools available to treat vegetation compared to VRM Classes III and IV. Limiting the tools or amount of area that can be treated will result in greater amounts of early or late seral conditions. There is also a greater risk of overstocked stands and stand-replacing disturbances.

## Vegetation Assumptions

- For the purposes of commercial activities, administrative access would be allowed on closed roads to meet vegetation objects; however, fewer open roads available to the public would limit the ability to access forest products.



- Grazing adjustments to season and stocking will continue to be analyzed through the permit process and monitored through processes such as Standards & Guidelines, to ensure that grazing management is consistent with site capabilities.
- Grazing reduces fine fuels and thus, under certain grazing seasons, reduces fire risk.
- Grazing use will meet Land Health Standards and Guidelines and thus not increase the amount of invasive grass substantially enough to affect fire regimes.
- All alternatives would follow state and federal guidelines for WUI designation; however, existing WUI mapping areas would be updated with new designations, as appropriate.
- The primary emphasis of vegetative treatments within Suppression Areas (Alternatives 2-5) and WUI Areas (Alternative 1) would be for fuels objectives associated with protection of resources and fire fighter safety, and thus more intensive than treatments outside of these areas.
- The ability to use the full range of Appropriate Response would move more vegetation stands towards FRCC1.
- Past management has contributed to current vegetation treatment needs.
- For the purposes of this analysis, it is being assumed that mechanical or prescribed fire treatments would not be done in seral conditions that are deficit across the plan area, except possibly in the case of "maintenance" treatments (i.e., the area has about 6,300 acres less of open, mature mesic ponderosa pine forest than is representative of ARV). Existing stands of open, mature mesic ponderosa pine would only be treated if "maintenance" (underburn) were needed. Also, no treatment was assumed necessary where early seral conditions (seral class A) are currently in surplus, except possibly in the case of seeding.

## Analysis of the Effects of the Alternatives on Vegetation

Vegetation was analyzed to assess the effects of attaining alternative objectives.

### Effects on Vegetation Common to All Alternatives

For the following resources/programs, there are no new actions proposed or no anticipated impacts at this scale on vegetation communities, their management, or commodity production: Soils, Air Quality, Vegetation—Special Status Plants, Paleontological Resources, Cultural Resources, Recreation Opportunities, and Lands and Realty.

Within grasslands, the plan area currently has high amounts of uncharacteristic vegetation conditions due to the abundance of annual grass, noxious weeds, and farmlands. Under all alternatives, treatments in grasslands would continue to include spraying herbicides to control weeds, burning, and seeding.

Currently Aldrich Mountain and Strawberry Mountain WSAs contain forest vegetation with tree densities and/or slash loads above preferred levels. Under Alternative 1, portions or most of these stands would be lost to insects, diseases or wildfires unless prescribed burning is used to control densities and slash loads.

### Vegetation Management Effect on Vegetation

#### Indicator: Treatment Need Met (current) and Location and Types of Treatments

Vegetation treatment currently needed to reach the midpoint of ARV: 146,746 acres of rangeland, 50,977 acres of forestland, and 10,111 acres of riparian. Vegetative communities that lack the appropriate mix of seral structural stages are at greater risk of insect, disease, and stand-replacing fire.

Generally, under Alternative 1 specific seral structural objectives are not identified, although there is reference to managing toward mid to late seral conditions for all communities. Despite this direction, the primary emphasis of rangeland treatments has, in practice, resulted in early to mid-seral conditions. Also under Alternative 1, treatment emphasis would continue to be on rangeland vegetation settings where juniper is invading. The majority of practicable large landscape burns have been completed. Fire treatments would continue to be focused on large blocks of BLM lands or areas where projects can be done in cooperation with adjacent landowners.



All of the action alternatives provide direction for retaining the appropriate mix of seral/structural stages based on the BpS (see Appendix E and F). Many of the same types of treatments would occur under the action alternatives as under Alternative 1; however, based on vegetation management objectives it would be clearer which stand conditions need to be targeted for treatment to bring whole systems into the ARV. Needs for achieving ARV are also considered within the context of lands adjacent to BLM lands. This would allow the BLM under Alternatives 2-5 to consider the spatial context of the vegetative communities within a larger ecosystem, and consider actions within the light of how ecosystems function across ownerships. In some cases this may mean managing specific seral communities on BLM lands at the high or low end of ARV to accommodate shortages or surpluses in surrounding areas. Managing to within ARV using a more systematic approach under Alternatives 2-5 would result in treatments that are more focused than Alternative 1 on meeting vegetation objectives. This approach would result in vegetative conditions where the types, intensities and response of vegetation after natural disturbance are within acceptable limits.

All of the action alternatives also establish prioritization criteria and a map depicting areas where coordinated interdisciplinary treatments would address the greatest number of resource needs (Map 4). ARV analysis indicates the possibility of delaying burning in some areas until shrub establishment has occurred from past treatments to increase juniper cutting in some areas, and to increase pre-commercial and commercial thinning of forested stands.

### **Rangelands**

Within rangelands, the majority of shrub and juniper BpSs currently have too much early (grass dominated) and late (juniper dominated) seral stages relative to ARV. There is also a deficit in mid-seral communities (e.g., shrub-dominated sites with good graminoid understories that are not being invaded by juniper). Fully developed western juniper woodlands (Phase III) can reduce the understory to the point that herbaceous plants cover less than one percent of the soil surface, and annual grass sites alter the fire regime and compete with native vegetation for moisture.

Under current direction, continued under Alternative 1, efforts to do landscape scale burns have reduced juniper and shrub cover. Most of the sites burned to date have contained mountain or Wyoming sagebrush, species important to the Greater Sage-Grouse. On similar sites, Ziegenhagen (2003) found that percent live canopy cover increased 3.429 times (3.932 to 2.990, 90% CI,  $p$ -value  $\leq 0.001$ ) with a doubling of years since fire. Similarly, mean sagebrush densities increased 0.227 shrubs/m<sup>2</sup> (0.267 to 0.188, 90% CI,  $p$ -value  $\leq 0.001$ ) with each doubling of years since fire. Much of the current early seral communities can be expected to naturally transition into mid-seral stages, and reduce shortage in this community type over time.

Natural successional processes would, in the absence of fire, continue to increase the number of post settlement western juniper in sagebrush habitats, creating a general homogenization of the landscape. Increased tree cover and density of post settlement trees would occur at the expense of the associated understory vegetation. Increases in juniper cover would increase the amount of exposed mineral soil, especially on south slopes.

Removal of western juniper increases resources (soil moisture and soil nutrients) available for the remaining vegetation (Miller 2005). As cover and density of native herbaceous plants increase so does the sites ability to capture and utilize precipitation and solar energy. The increased spatial distribution of native herbaceous vegetation also increases the potential of fire spread during less extreme fire conditions. More natural fire spread and intensities would extend the time these stands remain in early and mid-seral conditions where herbaceous species dominate opposed to woody species.

Rangeland burns seldom remove more than 50% of the juniper cover. The lack of natural fire under current management direction (Alternative 1) has allowed juniper encroachment on many acres. Prescribed fire treatments across these areas could result in the amount of early seral (lacking shrub cover) being more than that expected under normal burn frequencies. In the past, projects were identified using a variety of methods, often specific to one resource benefit. If current management were to continue under Alternative 1, it is likely that the surplus of early seral rangeland communities would continue to increase and the surplus of late seral communities would decline.

Under the action alternatives, treatment types in rangelands would be similar to Alternative 1 with the exception of the spatial orientation and timing of activities. Activities would be more focused on bringing conditions into



ARV and trending towards FRCC1. Over time this would bring natural disturbance patterns, function, and effects to seral structural conditions more in line with historic fire regimes. Vegetative conditions within ARV and predominantly FRCC1 are a more diverse resilient complement of vegetative conditions across the landscape.

In general, Alternatives 2–5 target areas and treatments that would facilitate fire to achieve resource and protection objectives, which in turn would result in a greater number of woody species dominated acres being treated than Alternative 1. As a result, Alternatives 2–5, in conjunction with the use of BMPs (see Appendix B) would result in less loss of understory vegetation, retention of shrubs in areas currently outside of ARV, and greater treatment through wildland fire.

### **Forestlands**

Within forestlands, current seral conditions show a surplus in the smaller size classes, multi-storied canopies, and later seral species, typically seral class A, B, C, and/or U (Appendix F). The lack of precommercial and commercial thinning if continued under Alternative 1 would result in denser stands with more shade-resistant species compared to Alternatives 2–5. This would subject the remaining large trees to competition stress, risk of insect, disease, and stand-replacing fire, all of which would increase the deficit of large structure and surplus of small structure.

In comparison, under Alternatives 2–5, a greater emphasis would be placed on treatment in priority areas and active forest management of stocking densities. Through time the increased focus of treatment would reduce the risk of stand replacement in dry mixed conifer, pine, and aspen stands, reduce the potential loss of large structure components, and create conditions where fire would reduce ground fuels, prune, and thin stands consistent with the fire regime.

Although similar in the assumed amounts of treatment, targeted treatments to meet ARV objectives and use of Appropriate Response in the action alternatives address far more of the current need than Alternative 1. As shown in Table 4-5, the action alternatives address 31% and 47% more of the current treatment need in rangelands and forestlands respectively over 30 years. Treatment need displayed in Table 4-5 reflects the need to reach ARV midpoint. Actual departure from ARV is displayed in Appendix F. When the continued growth and expanding range of tree species is considered, Alternative 1 has a greater risk of vegetative conditions not being within the ARV.

### **Old Growth Management**

Without specific definitions or management direction to retain or promote juniper woodland and old growth forest, these values would not receive adequate protection. Under Alternative 1, currently only the Baker RMP mentions old growth (see glossary), and very few of the forested acres are within the Baker RMP boundaries, there would be only general direction to retain old growth. There would be no old growth definitions or old growth management requirements. The other plans currently covering the JDB plan area are even more silent on the issue of old growth management.

### **Juniper**

Prior to Euro-American settlement, fire limited the range of juniper. Where post settlement western juniper trees continue to establish and grow in old growth stands, cover and density of western juniper increases. Mortality rates increase due to competition for water and nutrients. The amount of standing and dead woody material also increases. Post settlement understory trees increase ladder fuels and increase the potential for wildfire and thus loss of existing old growth trees.

Rangeland maps currently identify 8,149 acres where old growth juniper trees and stands could be managed.

Although not specified in the existing RMPs, the BLM has recognized the need for old growth management for individual trees for several years. Individual and patches of old growth trees have been left within juniper cuts. Due to the often rocky, harsh nature of old growth juniper sites, loss to prescribed fire is limited. These management actions and trends would be expected to continue under Alternative 1. Under the action alternatives, all rangeland BpSs with a juniper component would require a percentage of those sites to be managed toward or retained in old growth juniper conditions. Additionally, definitions for old growth trees provided under Alternatives 2–5 would increase the likelihood that those trees are retained during treatments.



## **Forested**

Throughout the past and current planning period (1985 to present), large and small diameter trees were both harvested and retained for future forestland habitat. However, due to the current lack of direction, the majority of the forested BLM lands currently have scattered large trees that would meet old growth definitions, but patch sizes are insufficient to meet the definition of an old growth stand. There are currently 252 acres that would meet the old growth stand definition (see glossary). Historic logging practices on surrounding lands seldom retained old growth values. Over the past two decades, retaining large structured forest has become more common, especially on federal lands. These trends would be expected to continue under Alternative 1. The action alternatives provide a definition of old growth trees and stands, seral structural objectives by BpS, and guidance for retention of large trees. See Appendices E and F for existing and desired acres of large structure forest (forested seral classes D, E, and sometimes C).

The action alternatives provide guidance for the desired amounts, types and structural components (e.g., patch size, snags, down logs, etc.) as appropriate for the site. The action alternatives also provide direction for managing insect, disease, and fire to limit the risk of loss of old growth to disturbance.

As described above, the greater emphasis placed on treatment of forested stands in the action alternatives would reduce the potential for insect and disease mortality, competition stress, and stand replacement fire compared to Alternative 1. This combined with clearer old growth retention standards and definitions would result in more forested stands moving toward old growth conditions.

## **Forest Products and Areas Designated for Primary Forest Management**

Under Alternative 1, there are 47,662 acres of forest potential currently in Timber Management Units (TMUs) with a management emphasis on forest health and production, as well as the enhancement of other resources. Juniper products are available on 207,583 acres. There are 23,536 acres of forest potential that are not in a TMU and would likely not have received treatment for forest health under Alternative 1. The current production rate or ASQ for the plan area is an average of 3.58 million board feet (mmbf) per year. However, since 1997 the plan area has fallen short of this rate by 73%, averaging 0.956 mmbf per year (see John Day Basin Analysis of the Management Situation [AMS], p. 139). Forest management would primarily be salvage of dead trees and stands with some treatment in WUI. The lack of proactive treatment across all forested stands would result in overstocked stands, a shift in species composition to more shade-tolerant species, greater risk of drought and fire loss, and an increased time frame to attain old growth conditions or risk of loss of those components.

Following current direction, few commercial or noncommercial permits would be provided under Alternative 1 on an annual basis. When vegetative treatments are applied, efforts would be made to utilize as many products as possible. Road access for noncommercial products would continue in the current state.

Under the action alternatives, there are no areas designated with a timber management emphasis. Under Alternatives 2, 3, and 5, there would be 269,934 acres (195,208 juniper and 74,726 forests) available for forest or juniper products based on an emphasis on forest health with forest products as a by-product. Alternative 4 has 270,208 acres (199,408 junipers and 70,800 forests) available with the same emphasis as Alternatives 2, 3, and 5. Probable Sale Quantity (PSQ) would be 2.54 mmbf per year, and would be available for every 1,000 acres treated. Forest and juniper products would be made available when treatments are applied. Alternatives 2 and 4 remove 66,825 and 75,393 acres, respectively, from product availability. These reductions are based on acres designated as Wilderness or WSA, or managed for wilderness characteristics.

Alternatives 2, 3 and 5 would generate 1.04 mmbf per year less than if Alternative 1 was fully implemented. In the short term, Alternative 4 is expected to generate the same amount of volume as the other action alternatives; however, there would be a slight yearly reduction through time. In addition, restrictions and guidance in the action alternatives would result in fewer large trees being included in the volume. Thus, of the 2.54 mmbf generated in the action alternatives, the material provided would generally be smaller than in Alternative 1. The lack of a large tree component in sale offerings could make the sales less attractive to bidders. If removal of small diameter material is not economical, fuel loads could increase in treatment areas until prescribed fire can be applied.



The action alternatives would allow commercial forest health treatments on more acres than Alternative 1, thus resulting in a potential for greater amounts of treatment to be completed. The primary emphasis toward timber production within the identified TMU in Alternative 1 would result in an increase of small to small saw log size classes with open conditions. Forested lands in the planning area currently have a surplus of these conditions. The increased emphasis on forest treatments for forest health in the action alternatives would reduce surpluses of smaller material and adjust species compositions (generally toward shade intolerant species).

Based on management direction contained in the action alternatives the amount, type, and locations of treatments would accomplish 30 to 50% more of the ARV and FRCC1 objectives than Alternative 1 would. The action alternatives are also more likely to retain or enhance development of unique or limited vegetative conditions such as aspen and old growth.

### **Aquatic Habitat Management Effects on Vegetation**

Under Alternative 1, there would be 51,260 acres that would be managed based on guidelines in PACFISH for Riparian Habitat Conservation Area (RHCA) management. Current PACFISH buffers are 300 feet on each side of fish-bearing streams and 100 feet on each side of non-fish-bearing streams. These buffer widths and the requirement to do watershed analysis have limited, or in most cases precluded, necessary treatments within riparian areas. Currently, most forested and juniper stands within riparian areas have higher than prescribed basal areas (see glossary). Hence, under Alternative 1 forest stand vigor is restricted and forest conditions are more susceptible to insect and disease epidemics, competition stress, stand replacing fires, and a shortage of desired riparian hardwood species.

Under the action alternatives, 139,673 acres would be managed based on guidelines of the Aquatic Conservation Strategy (see Chapter 2). The action alternatives provide specific management direction within the riparian zones on 88,413 more acres than Alternative 1. Objectives, actions, guidelines, and BMPs contained in the action alternatives, such as ARV, address most of the issues contained in watershed assessments from a vegetative standpoint.

The PACFISH guidance requires formal watershed analysis to be completed prior to riparian management, and existing management focuses on avoiding impacts from vegetation treatments. Hence, riparian habitats seldom receive vegetation treatments under PACFISH management direction. The ACS allows for vegetation treatments with ID Team input and prescribes active vegetation management in riparian areas.

All of the action alternatives increase the potential to treat conifers within riparian and terrestrial areas contained within riparian and lentic buffers. Under the action alternatives, treatment in these areas would reduce the risk of disturbance events impacting adjacent terrestrial vegetation, allow for management of riparian and lentic hardwood species, and reduce the risk of losing large conifer trees.

Currently, juniper densities are increasing within riparian areas and are out-competing riparian associated species. Many riparian habitats no longer exhibit riparian characteristics due to water loss and shading. Under Alternative 1 and without treatment, this trend would be expected to continue. Under the action alternatives, treatments would likely target juniper and conifer encroachment on flood plain terraces and lentic areas. These types of treatments would benefit species such as greasewood, basin wild-rye, basin big sagebrush, elderberry, and mock orange.

Shade-tolerant forestland species have drastically increased over the last two decades resulting in overstocked stands, increased fire and drought stress to large trees, and shaded-out riparian species. Under Alternative 1 and without treatment, the loss of riparian species and large structure trees is likely to continue. Under Alternatives 2-5, treatments would likely target shade-tolerant conifer trees in the mid and understory. Treatments in lentic areas may remove all but the large structure conifer. These types of treatments would benefit species such as aspen and cottonwood, two of the species most departed from ARV from the standpoint of their relative abundance. The action alternatives would attain ARV and FRCC objectives better than Alternative 1.

### **Fire and Fuels Management Effects on Vegetation**

Under Alternative 1, there are 22,304 acres designated as WUI. More intense treatments in the WUI area, with the sole objective of reducing fire hazard, would be considered under Alternative 1 than Alternatives 2-5. The



approach under Alternative 1 would meet WUI objectives, but could lead to vegetation conditions that are out of balance across ecosystems. The lack of designated areas for Appropriate Response (including fire to achieve resource and protection objectives) limits that ability to utilize natural fire starts to move stands toward more ecologically intact conditions (FRCC1).

The action alternatives designate 85,391 acres of WUI, 22,304 acres of Suppression, and 434,306 acres of Acceptable Management (AM). With potentially greater funding availability for WUI treatments than in the past, a greater percent of vegetative stands and communities could be treated for both community safety and meeting ARV objectives. Vegetative treatments are required to consider ARV objectives across BpSs at a scale of 20,000 acres minimum. Because of this, vegetative treatment within suppression zones would still be designed to meet ARV objectives across the landscape. Utilization of Appropriate Response to move BpSs toward FRCC1 would also reduce the need to implement other treatments to meet ARV objectives.

Following BMPs and resource objectives, fire to achieve resource objectives is expected to be allowed in grasslands with good native species composition and limited annual grass, shrub and juniper communities where post settlement juniper would be removed, and/or forested understory burns. These types of treatments would result in less shade-tolerant forest species, fuel loading, and late seral species (juniper and shrubs) in rangeland BpSs. These conditions are currently surplus and without treatment are expected to increase throughout the planning area.

The focus approach, increased WUI designation and expected funding association, and the ability to utilize appropriate response and fire to achieve resource objectives in the action alternatives would increase the amount of treatment and ability to meet ARV and FRCC objectives over Alternative 1.

### Livestock Grazing Effects on Vegetation

It is assumed that ungrazed lands will accumulate more abundant and contiguous fine fuels, thus allowing fires to spread and carry through areas where they would not if the fine fuels were grazed yearly. It is assumed that grazing on allotments is considered sufficient to limit the accumulation of fine fuels. It is assumed that reserved forage or closed allotments would either be grazed so infrequently or not at all that fine fuels would be allowed to accumulate. For purposes of analysis it is assumed that all grazing allotment permits would be voluntarily relinquished (see Livestock Grazing, Chapter 2). In practice, since permit relinquishment is voluntary, changes in the categorization of open, closed and reserve forage allotments could vary greatly across the plan area (Tables 4-6 and 2-23).

Under Alternative 1, the majority of allotments are currently in a rest rotation system, so even though they have an active permit, portions of the allotment are ungrazed at times. Herbaceous vegetation accumulations would be on a much smaller scale than what would occur if the entire allotment was not grazed. The majority of allotments are grazed in the dormant season (see glossary), which means that during fire season they typically have current year's growth which retains moisture later into the year than fine fuel buildup that is dead from previous years. Under intense fire burning conditions even recently grazed stands would burn; however, it is assumed that actively grazed allotments would have less fire spread during lower intensity burning conditions due to fuel continuity. In areas of high annual grass concentrations, less fire spread would limit the potential spread and dominance of the annual grasses. In mid-/late seral grass and shrub communities, less fire spread would result in succession to woody species faster than if there were more fire. In forested communities, it can reduce connectivity with ladder fuels, thereby reducing the potential for crown fire in stands with shade-tolerant species in the understory.

**Table 4-6. Acres of Open and Closed Allotments in the plan area if all grazing leases were relinquished.**

	Alternative 1 Acres	Alternative 2 Acres	Alternative 3 Acres	Alternative 4 Acres	Alternative 5 Acres
Open*	395,495	56,382	188,326	182,845	186,711
Close	0	385,692	253,748	259,229	255,363

\* Relinquished allotments in the Open category can be managed as Open or Reserve Forage.



When results of the assumed relinquishment (see Table 4-6) are considered in conjunction with grazing decisions for the North Fork allotments (primarily composed of acquired lands), Alternative 2 would result in the greatest amount of acres not grazed. Alternatives 3 and 5 would have about the same amount of areas ungrazed and Alternative 4 would have slightly more acres closed.

Assuming all allotments are relinquished, Alternative 2 would have the most contiguous areas of no grazing across the landscape particularly associated with the river corridors. This would increase fuel continuity and increase potential fire spread. Increased spread potential would allow for more acres to be treated through AM for resource benefit under the action alternatives than Alternative 1. Increase fire spread would increase the odds that fires would encounter areas with high percentages of annual grass. If allowed to burn, these areas would be expected to have increased annual grass composition and spatial extent. Fuels objectives in the action alternatives call for suppression or AM with point or line control to avoid these areas of high annual grass.

It is impossible to know the number of permits that would be relinquished or the amount of area this would encompass. Fire suppression strategies allowed in the action alternatives and the possibility for increased continuity of fuels would allow more acres to be treated and thus meet ARV and FRCC objectives better than Alternative 1.

### **Special Designations and Wilderness Characteristics Protection Effects on Vegetation**

Wilderness, WSAs, ACECs, RNAs, and Wild and Scenic Rivers (WSRs) and areas managed for wilderness characteristics generally limit the amount and/or type of vegetation treatments. In these designations fire treatments are allowed; however, fire is a less precise tool than mechanical treatments. The ability to specifically target species, size classes, or effect desired change is limited under these special designations. This is particularly true in Phase III juniper and forested stands. Grassland Biophysical Settings (BpSs) are very fire adapted systems and prescribed fire would be sufficient to remove encroaching woody overstory vegetation. Many of the grassland sites are influenced by undesirable annual grasses and fire will exacerbate this condition. Mechanical seeding can re-establish desirable perennial grasses and reduce annual grasses; however, it would be precluded in Wilderness, WSAs, RNAs, and areas managed for wilderness characteristics (in general Alternatives 1, 2, 3, and 5 would allow mechanical treatment whereas Alternative 4 would not as displayed in Table 2-1 in Chapter 2 Wilderness Characteristics).

Under Alternative 1, there are 95,893 acres of VRM Class I (WSA) and no additional areas protected for wilderness characteristics, no new areas of WSR (42,847 existing), and no new ACEC/RNA designations.

Alternatives 2, 3, and 5, would allow mechanical fuels treatment projects with the objective of ecological restoration and long-term restoration of wilderness characteristics. Alternative 4 would not allow mechanical vegetation treatment on approximately 32,536 acres of rangeland habitats and 2,896 acres of forest vegetation. This would result in vegetative conditions that would respond to disturbances in a manner that would likely result in seral structural conditions with excess of early or later seral conditions and increases the risk of uncharacteristic vegetation. In addition, having less mid-seral stand conditions in these areas would not provide typical habitats and would be at greater risk of insect and disease. Vegetation treatments in ACEC/RNAs would not be limited to prescribed fire, but mechanical treatments would be used sparingly to meet objectives. WSRs would require more restrictive logging practices.

Areas designated as WSA and VRM I management would continue in all alternatives and would restrict the use of mechanical treatment. Many of the current WSAs have been experiencing juniper expansion for the last 20+ years (Prineville District Records). These stands are at or moving toward Phase III juniper conditions. Within the last 10 years, the majority of WSAs have been treated with prescribed burns. In general, north aspects that retain more moisture have burned and grass and shrub return has been excellent. Flat and south aspects have in most cases not burned or have grown back with a higher than desired level of annual grass.

Through time, the increase in herbaceous conditions on north aspects may increase the amount of natural fire and further reduce the extent of juniper domination. The more likely case is that as these stands continue to grow, the understory vegetation would continue to decline, thus increasing the fire intensity necessary to support fire spread through the stands. This presents many risks to management. Higher intensity fires are harder to control,



resulting in greater risk to firefighter safety, potential damage to property or structures, excessive fire size, more homogenous burns (reducing stand diversity), and a higher risk of annual grass dominance.

Under Alternatives 2, 3, and 5, there would be 19,442 acres of lands managed for wilderness characteristics, 50,435 acres of WSR, and 6,639 acres of RNAs that would all allow restrictive use of mechanical vegetation treatments. Sensitivity to these values would dictate that these areas be treated using methods that ensure any reductions in areas managed for wilderness characteristics, WSR, or RNA values are temporary and that these areas are protected over the long term. This would increase the costs associated with tree removal and may make the cut material uneconomical to remove. If this is the case, prescribed fire would be needed to reduce fuel loadings to reduce the risk of insects and disease. The effects of VRM Class I (WSA) are the same as those described for Alternative 1. Alternative 4 would manage 35,457 acres for wilderness characteristics and would have the same effects as those described for WSAs for Alternative 1.

The WSR designation proposed in the acquired lands along the North Fork John Day River would allow forest health activities; however, the logging practices may be restricted to meet visual quality objectives. This could limit the feasibility of commercial timber sales, which would reduce the amount of area economically feasible to treat. Untreated stands would have greater potential for stand replacement fire and insect outbreaks with increased risk to adjacent stands in the watershed.

The additional areas allocated for VRM II and WSR, and areas managed for wilderness characteristics in the action alternatives would decrease the likelihood of balancing ARV needs in these areas. Lack of targeted forest health treatments would increase the amount of shade tolerant species and fuel loadings through time adding to the existing surplus of these conditions.

The action alternatives designate more acres than Alternative 1 where the full array of management tools is not available. This increases the difficulty of meeting the vegetative objectives of these areas and balance of ARV objectives across the landscape. Alternative 4 would put the last remaining large structure forests on BLM lands at risk of insects, disease, or fire and has the highest potential for conversion of shrub BpSs to an overabundance of late seral conditions (phase III juniper).

## **OHV Effects on Vegetation**

In general, off road OHV use increases the risk of noxious weed spread. Under Alternative 1, there are 234,272 acres of areas open to OHV use. Under Alternatives 2, 3, 4, and 5, there are 3,971; 4,571; 2; and 0 acres, respectively, open to OHV use. Due to large acreage open to OHVs and its spatial distribution across the plan area, there is much greater risk for the spread of noxious weeds, annual grasses, and invader species to every BpS under Alternative 1 than Alternatives 2–5.

Under the action alternatives, by reducing the size of OHV open areas it would be easier to control noxious weed infestations by preventing OHV users from driving through infested areas and then into uninfested communities. Illegal OHV activity would still be expected, but the amount and distribution of off road OHV use is expected to be much less in the action alternatives than in Alternative 1. Alternative 2 and Alternative 3 pose the greatest risk to loss of vegetative cover in the Rudio Mountain open OHV area. The open area on Little Canyon Mountain (LCM) currently has very minimal vegetation. The level of compaction in the north and south pits of LCM would limit the type and amount of vegetative recovery even under Alternative 5 with no OHV use. Vegetation would be expected to reestablish more completely in both pits under Alternative 5 than the other alternatives; however, it is likely to take 50 plus years to do so without active restoration. Lack of vegetation in the pits occupies less than 5 total acres and is well within the natural variability for openings in stands and thus would not affect the vegetation community's ability to pollinate or cause wind throw.

## **Energy and Minerals Effects on Vegetation**

The action alternatives have a larger percentage of the landscape that are excluded from rights-of-way or mineral entry or require avoidance with stipulations to protect vegetative resources. Alternative 4 has slightly more areas where energy and mineral development would be restricted. Key vegetative communities would receive more protection under the action alternatives making it more likely that limited BpS seral structural communities would meet ARV objectives. Additional acres available for rights-of-way and development in Alternative 1 would



subject more types of vegetative communities to the potential for noxious weed and annual grass expansion associated with road access to sites. Alternative 1 would allow development for energy and minerals and associated rights-of-way in far broader number of plan communities and potential greater amounts of area. This increased potential exposure has the potential to increase fragmentation, add to the spread of invasive species, and limit the types and amounts of vegetation management activities by making it harder to perform prescribed fire adjacent to facilities.

### Lands and Realty Effects on Vegetation

Compared to Alternative 1, the action alternatives would serve to block up lands so that vegetation management is easier, and larger patch sizes can be managed, thus making it easier to achieve vegetation health objectives.

Based on the current parcels in the proposed land exchange associated with the Spring Basin Wilderness, there would be a net loss of annual grass dominated lands and high density juniper but a slight increase in Basin big sagebrush and bunch grass dominated communities.

### Integrated Effects on Vegetation Community Characteristics

Table 4-7 summarizes differences in management direction between alternatives that could affect finer scale vegetation community characteristics.

Alternative 1 only provides general direction for the protection of fine scale community characteristics, while the action alternatives refine the guidance and make it more specific to plant communities and current science. For example, under Alternative 1, management direction for community fuel loading could result in excessive fuel loading in dry forest types and too little down wood in moist forest types. As such, the action alternatives are likely to result in greater protection and maintenance of community characteristics necessary for overall landscape health than Alternative 1. The risk of stand-replacing loss or conversion to invasive species would be lower under the action alternatives. In particular, this direction would increase the potential to attain late and large structure components in the dry forest BpSs and mid-seral conditions in shrub with tree potential BpSs.

### Cumulative Effects

A summary of the reasonably foreseeable actions is included at the beginning of this chapter. Future management on BLM, Forest Service, State, private and other land is assumed to be very similar to current management. The Forest Service Schedule of Proposed Actions (SOPA) is indicative of the types of management actions likely to continue into the future throughout the plan area. The majority of vegetative treatments include thinning from

**Table 4-7. Summary of Differences in Management Direction Between Alternatives That Could Affect Vegetation Community Characteristics.**

	Alternative 1	Action Alternatives
Biological soil crusts	Provides evaluation criteria for biological soil crusts in the Rangeland Standards and Guides but contains no Standards or BMPs.	Provides BMPs for the retention and restoration of biological soil crusts.
Leave islands and patches	Requires 4.5% of treatment areas to be left untreated for wildlife cover and provides general direction to create diversity and uneven edges.	BpS descriptions provide patch size and leave island guidelines.
Fuel loadings	Current plans provide fuel loading BMPs that are not specific to vegetative communities.	Proposes fuel loadings specific to tree dominated communities, including size class requirements, such as large woody debris needed for wildlife.
Canopies and % cover	Current plans provide no direction for number of canopies or % canopy closure.	BpS descriptions provide appropriate canopy numbers and canopy closure ranges.
Snags	Manage at the 60–70% of Viable Populations.	Proposed direction provides snag sizes, types, and amounts specific to plant community (see Appendix S).



below, underburning, small forest products (post, poles, and firewood), salvage, hazard tree removal, noxious weed treatment, and juniper reduction. The majority of forest lands in the plan area are administered by the Forest Service (Ochoco, Malheur, and Umatilla National Forests). Vegetation management direction for the Forest Service is very similar to BLM. The trend for forested vegetation would be the reduction of sapling to small log size material generally from the understory. This should help the plan area as a whole move toward ARV.

Private land treatments are similar; however, more of the large structure trees are removed. Private land managers will in general continue to recover the value of dead and dying timber consumed in wildfires.

Effects of global warming specific vegetation in the John Day Basin Planning Area are difficult to quantify. While making an assumption that average temperatures will rise slightly is within reason, it is very difficult to predict how this would impact the jet stream and moisture patterns in the planning area. The majority of vegetative conditions are dictated by moisture, shade, and soil conditions. A recent Forest Service study determined that fire seasons are becoming longer. This combined with warmer temperatures would increase the risk of stand-replacing fires or insect and disease in overstocked forested stands. It would also increase the risk of the spread of annual grasses. The action alternatives place an increased emphasis on maintaining vegetative conditions within an acceptable range and allow management flexibility to make adjustments to landscape level vegetative balances. This monitoring should indicate climatic changes are impacting a particular BpS in a negative fashion. The action alternatives also allow the use of appropriate response for wildfire that is expected to increase the amount of area managed within a normal disturbance cycle and thus reduce the potential impacts of climate change relative to Alternative 1.

Alternative 1 proposes to manage vegetation communities in a mid- to late seral condition; however, if local prescription and temperature patterns shift significantly this may not be possible. It is expected that current trends, such as larger and more intense wildfires and insect and disease outbreaks, would continue to worsen if global climate change impact local moisture and temperature regimes.

Additional limits to the types of tools allowed for treatment in Alternative 4 wilderness characteristic areas have the potential to reduce treatment effectiveness, which would increase competition stress, particularly if climate change does alter precipitation and temperature regimes. Climate change could also make the use of prescribed fire more difficult due to increased fire spread risks, expansion of invasive species, and moisture limitations may impact sites ability to revegetate following fire.

Management objectives such as ARV are landscape scale objectives. These objectives are more likely to be attained in areas where surrounding lands are managed with similar objectives. Because the U.S. Forest Service lands are managed with very similar objectives to BLM lands, it is more likely that vegetative objectives can be met at a landscape scale in the North and South Forks of the John Day River.

## **Special Status Plants**

### **Introduction**

Analysis of the environmental consequences of the alternatives on areas with Special Status Plants considered the following key resources or resource uses: Vegetation (noxious weeds), Fire and Fuels, Wild Horses, Lands with Wilderness Characteristics, Special Designations, Livestock Grazing, and Recreation Opportunities (OHV use).

Unless discussed below, actions proposed under any of the alternatives would have no effect on Special Status Plants. Established protocols and procedures, as outlined in preceding chapters and listed as Best Management Practices, would result in the protection of known Special Status Plants during implementation of projects and would help to ensure there is not a trend toward Federal listing. Ongoing activities (for example, livestock grazing and OHV use) could have an effect on plants, whether or not sites were identified.

Indicators of effects to Special Status Plants include number and acres of sites (percent of suitable habitat occupied) and number and vigor of individuals per site (reproductive health). For most sites, the size in acres is not a good measurement of effects, as most sites are small and significantly less than one acre in size. Exceptions would be some sites of transparent milkvetch.



## Special Status Plants Assumptions

- Established weed control protocols would be followed (with botanical surveys prior to treatment) and a reduction in noxious weeds would be beneficial for native plants onsite (BLM 2007).
- Control lines for fire and fuels management would utilize existing roads and/or topography; no mechanical surface disturbance would occur.
- A resource advisor would be employed during any action requiring construction of control lines, fire camps, helipads, and other fire management activities.
- For the three Special Status Plant species documented in the plan area, fire is believed to be compatible (in the case of arrowleaf thelypody, documented), if not beneficial (Special Status Plant monitoring records on file in the Prineville District Office).
- Removal of increasing western juniper and other woody vegetation from a site could be beneficial to the remaining herbaceous species on site, depending on site selection, control methods, and follow-up management (OSU 2005).
- Special Status Plant conflicts with wild horses are limited to the Murderer's Creek HMA. The effects of wild horse use include both the grazing of plants and soil disturbance through trailing. Horses would be managed to the AML established for the HMA (Special Status Plant monitoring records on file in the Prineville District Office).
- Management of an area for wilderness characteristics would limit ground disturbances in these areas.
- Special Status Plants could be protected through designation of an area as an ACEC if there were restrictions on activities that were detrimental to Special Status Plants. Designation of an area for its visual quality would restrict surface-disturbing activities.
- The timing, intensity and duration of livestock grazing are not expected to be increased beyond current levels. Dwarf evening-primrose and transparent milkvetch are not normally affected by grazing so much as by trailing, loafing, or salting. Arrowleaf thelypody is palatable to livestock and inhabits stream/riparian areas, and is therefore highly susceptible to grazing impacts (Special Status Plant monitoring records on file in the Prineville District Office).
- The OHV use in the plan area is likely to increase over the next 10 years.
- The OHV use in a plant site is detrimental to that site; designation of open "play areas" would result in an increase in off-site OHV use unless tightly monitored; limiting OHV use to designated routes would decrease OHV use on plant sites, assuming there is vigorous compliance.

## Analysis of the Effects of the Alternatives on Special Status Plants

### **Noxious Weed Management Effects on Special Status Plants**

Noxious weeds threaten all native plant communities and have been documented in many Special Status Plant sites. Under all alternatives, noxious weeds would be aggressively controlled where they occur in Special Status Plant sites, and there are no substantial differences in effects between alternatives. In the short term, aggressive control could result in "collateral loss" to plants that may be inadvertently sprayed or otherwise impacted. Based on past experience, which included spot treatment of individual weeds, shielding of adjacent Special Status Plants from chemicals, and using manual techniques as opposed to chemical treatment where feasible, it is estimated that less than one percent of the Special Status Plants at any one site would be affected. In the long term, there would be an increase in all indicators, especially those relating to the reproductive health of plants in affected sites under all alternatives. At the present time, only arrowleaf thelypody sites appear to have noxious weed issues.

### **Fuels Management Effects on Special Status Plants**

In most cases projects are surveyed prior to implementation of fuels management projects, so documented plant sites can be protected or managed as needed, especially for mechanical treatments. Under all alternatives, concerns relate to the effect of fire treatment on plant sites not discovered during inventory.

Under all alternatives fuels management projects would continue. Due to the scarcity of fuels in transparent milkvetch and dwarf evening-primrose sites, it would be unlikely that any treatments would have an effect on these species. For arrowleaf thelypody the situation is different. Numerous sites, perhaps 40 of the 46 existing



sites, (60 of the 74 occupied acres), have a buildup of woody species that need to be reduced either through mechanical means or by fire. Under all alternatives, treatment of these sites would result in an increase in number of plants per site and an increase in reproductive health. In some cases additional historic habitat would be released, resulting in the re-establishment of plants and increasing occupied habitat by 25% to about 90 acres. The action alternatives (Alternatives 2–5) may have greater positive effects on Special Status Plants than the no action alternative (Alternative 1) based on the greater number of acres planned for fuels treatment under the action alternatives (see Table 4-5).

### ***Fire Management Effects on Special Status Plants***

Under all alternatives, the effects of fire management on Special Status Plants would be similar to those resulting from fuels management. Assuming protocol is followed, associated surface-disturbing actions would have no effect on Special Status Plants; however, unknown sites could be damaged. There is no way to estimate how many unknown sites might be damaged through surface-disturbing (non-fire) actions, but it would likely be less than one percent of all existing sites under all alternatives. Since these sites are not documented previously, there would be no way to assess if they would be affected by fire management activities in any case.

### ***Wild Horse Effects on Special Status Plants***

Under all alternatives, the number of horses in the Murderer's Creek HMA would be reduced to the established AML. This would result in a decrease of horse use in transparent milkvetch sites, primarily related to trailing, which would cause an increase in plant reproduction. While all 22 known BLM transparent milkvetch sites are likely accessible to these horses, horse use has been documented on 4 sites totaling about 69 acres. At least these four sites would be affected and it is likely a number of undocumented sites would benefit as well, with perhaps 20% of the sites (both documented and undocumented) receiving less use by horses. No substantial differences in effects of wild horses on Special Status Plants are likely between alternatives.

### ***Wilderness Characteristics Effects on Special Status Plants***

Of the areas proposed under the action alternatives for protection of wilderness characteristics, only the Clark Canyon area is known to contain Special Status Plants, with four known sites of arrowleaf thelypody, totaling about eight acres. Under Alternative 1, with no direction for management of areas with wilderness characteristics, these sites would continue to be vulnerable to surface disturbing activities although none are threatened at the present time. Managing areas for their wilderness characteristics under the action alternatives would provide additional protection for these sites since surface-disturbing activities would generally not be allowed. Any increase in non-motorized use would likely have minimal effects on Special Status Plants since the sites are remote and difficult to access.

### ***Special Designations Effects on Special Status Plants***

For ACECs that are currently designated under Alternative 1, there are no impacts to Special Status Plants, because Special Status Plants are not known or suspected in these areas. Under the action alternatives, designation of the Black Canyon ACEC/RNA and subsequent elimination of livestock grazing from this area would provide some additional protection for 6 sites (14 acres) of arrowleaf thelypody, or approximately 13% of the known BLM sites. Since this area is not now grazed to any large degree, the actual short-term benefits to the populations would be expected to be minor. However, in the long term these sites would be assured of continued protection from grazing. At the present time, approximately 60 sites of arrowleaf thelypody are documented worldwide (Vrilakas, pers. comm.), with only one fenced from livestock grazing, and so protection of these six sites would be noteworthy. Additional sites within the Painted Hills CAMP of the John Day Paleontology ACEC would not be affected through this designation since this ACEC is not proposed to protect plants. Additionally, a large portion of the proposed CAMP includes the existing Sutton Mountain WSA, which contains numerous plants that would benefit from Interim WSA Management. Special Status Plants are not known for the other ACEC proposals under the action alternatives.

### ***Livestock Grazing Effects on Special Status Plants***

Of the 74 documented Special Status Plant sites in the plan area, only one (an arrowleaf thelypody site) has been observed to be in a downward trend related to livestock grazing, and the impacts have been caused primarily by loafing. These impacts would likely continue under all alternatives unless this site was fenced. Management direction under all alternatives calls for taking action to avoid listing of sensitive species. For all other sites,



grazing would continue to have no discernible impacts, although it is unclear if livestock grazing is affecting the ability of certain sites to expand into adjacent, suitable habitat.

Under Alternatives 2, 3, and 5, certain allotments are designated to be closed if the lease is relinquished (ILR). This would affect 17 allotments containing 57 documented Special Status Plant sites (22 transparent milkvetch, 1 dwarf evening-primrose, and 34 arrowleaf thelypody). Removal of livestock grazing from these sites would have no effect on transparent milkvetch or dwarf evening-primrose since these plants are not in sites normally grazed by livestock. Since most of the arrowleaf thelypody sites are in situations where livestock grazing is not a factor (i.e., sites are generally inaccessible to livestock or only lightly grazed), there are likely to be no effects to these sites. However, it is probable that removal of grazing from these allotments would allow re-establishment of arrowleaf thelypody in at least some habitat that is not now occupied due to existing grazing pressure. Conceivably the amount of occupied habitat in these allotments could more than double, from an existing 44 acres to 100.

Under Alternative 4, 17 allotments containing special status plants would be closed if the grazing permit were relinquished (IPR), affecting 57 documented sites, (22 transparent milkvetch, 1 dwarf evening-primrose, and 33 arrowleaf thelypody). Although two more arrowleaf thelypody sites would likely be protected from grazing under Alternative 4, the impacts would be nearly identical as for Alternatives 2 and 3.

### **OHV Use Effects on Special Status Plants**

Under Alternative 1, OHV impacts (off-highway vehicles used off-road) would continue on affected plant sites and likely increase at others. At the present time, two sites have been documented to have current OHV use: a small (< 1 acre) site of arrowleaf thelypody near Kimberly, and a larger (12 acre) site of transparent milkvetch along the South Fork John Day River. OHV use in the arrowleaf thelypody site is primarily related to an OHV trail crossing the drainage. However, due to the transparent milkvetch's preference for open, gravelly slopes, its habitat is ideal for OHV use, at least from a recreational perspective, and OHV use would likely continue or even increase under Alternative 1. Approximately 250 acres, encompassing 12 sites, would remain threatened with OHV use. This is approximately 72% of the documented habitat of this species.

The action alternatives would at least restrict OHV use to existing roads and trails in the South Fork area. Even though many of these sites are adjacent to such routes, OHV threats to transparent milkvetch would be less under the action alternatives than under Alternative 1 assuming user compliance and agency enforcement.

Two recreation areas designated under the action alternatives would potentially affect Special Status Plants in the plan area. The Clark Canyon area, a subunit of the Bridge Creek SRMA, would be closed to OHV use under the action alternatives. This would help to protect four sites (12 acres) of arrowleaf thelypody known in the area.

Also proposed under the action alternatives are one or more Class II technical rock crawling areas immediately north of the John Day River between Service Creek and Kimberly. These proposed technical areas are presently open to OHV use and as a result there are isolated, ongoing impacts to plants as noted for Alternative 1. These areas would be designated as limited to designated routes under the action alternatives. Depending on which areas would be designated, up to 15 known arrowleaf thelypody sites (approximately 29 acres) could be affected. Due to the technical designation and resultant increase in public use, illegal OHV use would be expected to increase in the vicinity of these areas under the action alternatives. If OHV compliance was closely monitored, plant sites would likely be more secure under the action alternatives since under Alternative 1 the areas are "open."

### **Cumulative Effects**

Implementation of any of the action alternatives would result in positive cumulative effects to Special Status Plants. These effects would be directly related to an increased number of plant sites protected from livestock grazing, OHV use, and other activities, as well as enhancement of sites through fuels treatments.



## Invasive Plants

### Introduction

Analysis of the environmental consequences of the alternatives on invasive plants (noxious weeds) considered the following key resources or resource uses: Vegetation, Aquatic Resources, Wilderness, Livestock Grazing, Recreation Opportunities (OHV use), and Travel Management.

Indicators used to compare environmental consequences between alternatives include: potential for, or resistance to weed introduction and spread.

### Invasive Plant Assumptions

- Management of noxious weeds will take the same approach for all alternatives.
- The risk for expansion of weed infestations will be commensurate with the amount of disturbance on the landscape, which will vary among alternatives. For example, if more acres of vegetation rehabilitation are contemplated using mechanical treatments such as seeding or non-mechanical treatments such as prescribed fire, the potential for weed expansion will increase.
- Alternatives that include more restrictions on weed control activities will likely result in the reduction in the efficiency and effectiveness of treatment methods.
- Special area designations that restrict available weed management tools, such as motorized access, will also likely result in the reduction in the efficiency and effectiveness of treatment methods.
- Recreational use of OHVs will serve to expand weed infestations. Alternatives that restrict the area available to OHV use will have a lower potential for weed expansion than those in which larger areas are available for OHV use. Off-highway vehicle use increases the potential for weed expansion both within "Open" OHV areas and outside them.
- Surface disturbance from mineral extraction increases the potential for weed expansion. This type of surface disturbance necessitates weed control measures in Plans of Operation with related increases in costs.
- Traditional plant gathering areas could be adversely impacted by weed control activities if these areas are not fully identified prior to treatment.
- Wildlife can disperse invasive plants by ingesting seeds that can pass through the animal's digestive system unaffected, or by seeds becoming tangled in the hair or coat of the animal. Both methods allow invasive plant seeds to be transported to new areas (Sheley *et al.* 1996). Little can be done to prevent wildlife from spreading weed seeds other than to control seed sources. This can be done by limiting the spread of weeds through other vectors and treating known weed locations.
- Projected acres of noxious weed treatment by alternative are not quantified since current inventories of noxious weeds are incomplete.

### Analysis of the Effects of the Alternatives on Invasive Plants

#### Livestock Grazing Effects on Invasive Plants

Livestock can disperse invasive plants by seeds becoming tangled in the hair or coat of the animal, or by ingesting seeds that can pass through the animal's digestive system unaffected. Both methods allow invasive plant seeds to be transported to new areas (Sheley *et al.* 1996). Livestock grazing can be used to help manage invasive plants when incorporated into an integrated weed management plan. Managing season of use, stocking density, and grazing intensity can target invasive species (e.g., early season grazing in cheatgrass-infested rangeland) (Frost and Launchbaugh 2003). All alternatives provide for prescribed livestock grazing to control weeds. Even though livestock can contribute to the introduction and spread of invasive plants, absence of grazing does not preclude lands from problems with invasive species. While healthy native plant communities are important for greater site resistance to invasive plant establishment and expansion, research conducted on spotted knapweed determined that defoliation of grasses (grazing) was not required for the invasive plant to become established and that the establishment was not accelerated by moderate defoliation of native grasses (Sheley and Jacobs 1997). This may only be true for knapweed and this study cannot draw conclusions on other invasive species.



Alternative 1 would have the most acres open to grazing regardless of whether grazing leases are voluntarily relinquished. For the action alternatives, if no voluntary relinquishment of grazing leases is assumed, Alternative 3 would have the most acres open to livestock grazing followed by Alternatives 2, 5, and 4 respectively. If voluntary relinquishment of grazing leases is assumed, Alternative 2 would have the lowest number of acres open to livestock grazing followed by Alternatives 4, 5, and 3 respectively.

### **Travel Management and OHV Effects on Invasive Plants**

Roads and trails create edge habitats that may extend up to 200 meters from the road or trail edge. The impermeable surfaces of roads and OHV trails shed precipitation, increasing the available moisture in the adjacent areas (Ouren *et al.* 2007). Invasive plant seeds are often carried in undercarriages of vehicles and fall from the vehicles as they are driven down the roads or trails (Sheley *et al.* 1996). These seeds are dispersed to the favorable edge habitats. As a result, edges of roadways and trails commonly support invasive plants that can be transported by other vehicles using these routes.

The effects of the interim transportation system on invasive species would vary by alternative. The fewer miles of open roads, the lower the potential for weed infestation and spread. Alternative 3 has the highest number of open miles (879 miles), followed by Alternative 1 (742 miles). These alternatives would have a greater potential for increases in weed infestations than Alternatives 2, 4, and 5, which all have about 333 miles of interim roads. Although roads increase potential for weed infestation and spread, they also provide access for treatment efforts. Having fewer roads reduces treatment efficiency.

The OHV travel also serves as a vector for the spread of invasive plants. Areas designated as Open allow vehicle travel anywhere in the designated area, on or off-road. Traveling off-road allows seeds that are in the undercarriage of vehicles to be deposited cross country. Areas designated as Open are at higher risk of invasive plant establishment and spread than those designated as Limited or Closed. Areas designated as Limited restrict effects to route corridors. Areas designated as Closed would have the lowest potential for infestation and spread of invasive plants due to low use in these areas. Alternative 1 has the greatest probability for the spread of invasive plants. Alternative 1 has the greatest number of acres designated Open (234,272 acres) and the lowest number of acres designated Limited (155,228 acres) and Closed (67,332 acres). All action alternatives reduce the acres designated as open by at least 98% as compared to Alternative 1. Alternative 5 has no acres designated as open and Alternative 4 only designates two acres as open. All action alternatives have more acres designated limited and closed than Alternative 1. Alternative 4 designates the greatest number of acres as closed (155,325 acres). While trails increase potential for weed infestation and spread, they also provide access for treatment efforts. Having fewer trails reduces treatment efficiency.

In the Little Canyon Mountain (LCM) area, Alternative 1 poses the greatest risk for the infestation and spread of invasive plants. Under Alternative 1, the LCM area would be designated as open, allowing for off-road transport of invasive species. Alternatives 2, 3, and 4 would designate the LCM area as limited. Limiting travel to designated routes restricts the infestation and spread of invasive plants to route corridors. Alternative 5 would designate the LCM area as closed. All BLM-administered roads on Little Canyon Mountain would no longer allow public use. This does not include the County or Forest Service trailhead access road. Alternative 5 would have the lowest potential for infestation and spread of invasive plants due to a lower volume of vehicles traveling the designated routes. However, risk still exists because routes would continue to be traveled, and effects would be similar to Alternatives 2, 3, and 4.

The North and South Pits of LCM would continue to be used in all alternatives (designated as Open in Alternative 1 and Limited in Alternatives 2–4) except Alternative 5 (designated as closed). These pits currently have very minimal vegetation. The high level of compaction in the North and South Pits of LCM limit the type and amount of vegetation present. Vegetation would be expected to continue to be scarce in the pits with continued disturbance (Alternatives 1–4). Since the pits are highly disturbed areas, they are more susceptible to invasive species. If OHV use is sufficient in open areas it is possible that populations would not be able to establish due to repeated disturbance. If vegetation establishes at all, it would be expected that small populations of invasive species would be present in the pits under Alternatives 1–4. Vegetation would be expected to reestablish more completely in both pits under Alternative 5. However, without active restoration it can be expected that reestablishment would be slow, and may result in the establishment of large populations of invasive species in the pits since invasive species tend to thrive in disturbed areas and many times outcompete native species. Due to



the small size of the pits, less than 0.1% of the LCM area, spread of invasive species from populations in the pits would be isolated, unless carried from the pit by a vector.

### ***Vegetation Management Effects on Invasive Plants***

Tools available for vegetation management include prescribed fire, seeding, mechanical treatments, and/or chemical treatments. Any disturbance caused by vegetation treatments creates the risk of generating open sites for invasive plants. The resulting increase in nutrients, water, and sunlight following treatments allows invasive annual grasses, such as cheatgrass and medusahead as well as other invasive plant species, to flourish. Their establishment can hinder establishment of deep-rooted perennial grasses (Barret 2007). Seeding sites already dominated by annual grasses or other invasive plants would help mitigate establishment of undesirable plants by providing a large seedbank of desirable plants to capture newly released resources on the site immediately following treatment.

Vegetation management is designed to improve ecological condition and function of treatment areas. After a post-project period of stabilization, improved condition on treated sites would provide the site with greater resistance to invasive plant establishment and expansion. Under Alternative 1, it is assumed 108,000 acres would be treated in the next 30 years. The action alternatives assume 177,000 acres would be treated in the next 30 years. The action alternatives expect to treat more acres than Alternative 1, resulting in a greater potential for the introduction and expansion of invasive plants. The action alternatives also have a greater potential for improved ecological condition and function, which provides greater resistance to invasive plants, than Alternative 1.

### ***Special Designations and Wilderness Characteristics Management Effects on Invasive Plants***

Motorized traffic is restricted in Wilderness Areas, WSAs, and areas managed to maintain wilderness characteristics. Wilderness Areas are closed to motorized use. In WSAs and areas where wilderness characteristics are protected, motorized use is restricted to designated routes. The efficiency and effectiveness of weed treatments decreases as motorized access decreases. All alternatives have 6,411 acres of designated Wilderness and 89,428 acres of designated WSAs. Alternative 1 limits management of wilderness characteristics to previously designated Wilderness Areas and WSAs. Alternatives 2, 3, and 5 identify 19,442 acres for the protection of wilderness characteristics. Alternative 4 identifies 35,457 acres for the protection of wilderness characteristics. Weed management efficiency and effectiveness would be more restricted in the action alternatives than Alternative 1 because of additional acres with restricted motorized access through areas managed to protect wilderness characteristics.

### ***Aquatic Resources Effects on Invasive Plants***

Invasive plant treatments in riparian and aquatic ecosystems are more restrictive than upland treatments. Additional BMPs are provided in Appendix B to ensure non-impairment of water quality, soil productivity, or locally important fish. Treatment restrictions do not vary between alternatives, but all action alternatives specifically address invasive plant management calling for cooperation with County Weed Boards and Soil and Water Conservation Districts to target noxious weeds in riparian areas. Alternative 1 does not specifically address invasive plant management.

### ***Cumulative Effects***

Invasive plant management on adjacent private, Forest Service, State, and other land affects BLM lands. The Forest Service has a noxious weed treatment program. The treatment of noxious weeds on adjacent lands reduces seed sources that could potentially be spread to BLM lands. If private land managers control noxious weeds on private property, seed sources can be prevented from spreading onto BLM lands. If private land managers do not work to control noxious weeds on private property, invasive plant species will continue to invade into adjacent public lands. Many private land managers are taking a proactive approach to prevent the spread of weeds and treat known sources of invasive species by working with the local county Weed Control Specialists, Soil and Water Conservation Districts, and Weed Management Areas.

The effects of global warming specific to invasive plant species in the John Day Basin planning area are difficult to quantify. While making an assumption that average temperatures will rise slightly is within reason, it is very difficult to predict how this would impact the jet stream and moisture patterns in the planning area. A recent



Forest Service study determined that fire seasons have been becoming longer. This combined with warmer temperatures will increase the risk of stand-replacing fires or insect and disease in overstocked forested stands. It will also increase the risk of the spread of annual grasses and other invasive species.

With warming temperatures, native plants would be expected to make an upward elevational migration. If conditions warm too quickly, native plant species may be lost from their lower elevation limits faster than they can migrate upward into their new habitat. This would potentially result in an increase in unused resources that would then be available to invasive plant species (Tausch 2008).

## Fire and Fuels

### Introduction

Analysis of the environmental consequences of the alternatives on fire and fuels considered the following key resources or resource uses: Air Quality, Fuels, Wildlife, Lands with Wilderness Characteristics, Visual Resources, Special Designations (RNAs), Recreation Opportunities (OHV use), Access and Travel Management, and Lands and Realty. Livestock grazing effects on fuels are discussed in the Vegetation section of this chapter.

Indicators used to compare environmental consequences between alternatives include: risk of uncharacteristic fire, area proposed for treatment, opportunities for the use of fire to achieve resource objectives, access for mechanical fuel treatment, amount of prescribed fire or suppression, fire hazard, fuel loading, risk of uncharacteristic fire, and potential for human-caused ignitions.

### Fire and Fuels Indicators and Assumptions

- **Risk of uncharacteristic fire from fuel loading (Fire Regime Condition Class or FRCC).** Fire is a natural process; exclusion of fire may result in continued accumulation of fuel leading to fires with uncharacteristic behavior and effects. Changes to native plant communities from past management actions such as fire suppression, road building, agricultural and urban conversion of wildlands, timber harvest, and grazing have all contributed to the current altered fire environment. As fuel loads increase, so does the risk of fire. However, it is not desired, nor possible to restore every acre of federal land within the plan area to a Fire Regime Condition Class 1. In some areas, managing for FRCC 2 and 3 vegetative structures meets other resource objectives. None of the alternatives would eliminate wildland fire from the ecosystem.
- **Area proposed for treatment.** Restricting the use of treatments would limit the reduction of hazardous fuels. Increasing the area of treatment increases the area attaining fire and fuels objectives.
- **Opportunities for the use of fire to achieve resource objectives.** Levels of treatments proposed through the use of fire to achieve resource objectives may vary considerably from year to year, as the frequency and occurrence of unplanned fire starts in a given year is unpredictable. Response strategies will be guided by many variables including but not limited to weather, national and local preparedness levels, time of year, fuel conditions, and line officer approval.
- **Amount of fuels treatment.** Averaged across the plan area, decreases in accessibility would decrease the likelihood of mechanical fuels treatment. Increased restrictions would decrease the likelihood of fuels treatment. Choices about how to access and prioritize fuels restoration and maintenance projects involve considering multiple objectives at the landscape scale, including reduction of risk at the WUI, and enhancing or maintaining sustainable habitats, watersheds, visual resources, and recreational, social and economic opportunities.
- **Amount of WUI acres.** The WUI currently occupies 85,391 acres of BLM land in the plan area, and it is expected to continue its expansion. The WUI acres within the plan area are expected to increase with new rural housing development.
- **Flame length and fire hazard.** Flame length is an indicator of fire hazard. This analysis assumes ground suppression forces can operate safely adjacent to flames that are 4 feet in length or less. Extreme fire behavior, including crown fire, rapid surface spread, and long-range spotting, creates an unsafe



environment for firefighters and the public. Fuels treatments on federal lands alone will rarely improve the chances for safe and successful community protection if the homes to be protected are surrounded by fuel on the private property, and the structure itself is constructed of extremely flammable materials. The most effective community protection strategy is to have a fire-safe structure, surrounded by vegetation on the private property that will burn with low intensities, surrounded by wildlands (regardless of ownership) that are managed for low-intensity fire behavior.

- **Potential for human-caused ignitions.** Maintaining or designing a vegetative environment that reduces fire hazard, including species and structural characteristics will produce safely manageable fire behavior in the event of an unplanned ignition.

## Analysis of the Effects of the Alternatives on Fire and Fuels

### Effects Common to All Alternatives

Proposed management of the following resources and resource uses are not anticipated to have impacts to fire and fuels: Aquatic Resources, Wild Horses, Cave Resources, Native American Uses, Paleontological Resources, Cultural Resources, Energy and Mineral Resources, and Lands and Realty.

### Fire and Fuels Management Effects on Fire and Fuels

Approximately 97 percent of BLM-administered lands within the plan area currently fall into an FRCC of 2 or 3, as estimated using local data and the LANDFIRE FRCC Mapping Tool.

Under Alternative 1, prescribed fire would be carried out with an approved burn plan, but there would not be any direction for targeting the location of fuels treatments or how to prioritize fuel treatments. If all fires are fully suppressed, as specified under Alternative 1, fuels would continue to build up and increase the risk of uncharacteristic wildfire. Managing unplanned ignitions to achieve resource objectives would not be an option in Alternative 1. Under Alternative 1, treatment of approximately 3,600 acres of BLM land per year (see Table 4-5) would move the Fire Regime Condition Class from a 3 or 2 toward a 2 or 1, or maintaining acceptable fire regime conditions. Under Alternative 1, fire suppression efforts would reduce the area of fuels treated by naturally ignited fire.

Under Alternatives 2–5, treatment of approximately 5,900 acres of BLM land per year (see Table 4-5) would move the Fire Regime Condition Class from a 3 or 2 toward a 2 or 1, or maintain condition class. Less aggressive responses to wildfires, including fire to achieve resource objectives would be implemented. Fuels treatment prioritization criteria in Alternatives 2–5 seek to identify areas where vegetation treatments would allow the full array of appropriate responses of managing wildfires. As this approach is applied, the opportunity for treatment through wildfire would increase.

Table 4-8 displays differences between alternatives in the amount of the plan area zoned into three fire management categories: Wildland-Urban Interface (WUI), Suppression, and Appropriate Response. Under Alternative 1, full suppression would be implemented for all wildfire ignitions on BLM lands, whether they fall within the WUI or not. Under Alternatives 2–5, a “Suppression Zone” has been identified around communities and improvements. This includes, but is not limited to, areas that have developed a Community Wildfire Protection Plan (CWPP) and incorporates areas identified by the State of Oregon as WUI. The area in WUI is larger under Alternatives 2–5 than Alternative 1. Under Alternatives 2–5, broader definition of WUI, prescribed

Table 4-8. Suppression Strategies by Zone.

Category*	Zone Size (Acres)	
	Alternative 1	Alternatives 2-5
Wildland-Urban Interface**	22,304	85,391
Suppression Zone	N/A	22,304
Appropriate Response Zone	N/A	434,306

\* Categories are not mutually exclusive and may not cover the entire plan area.

\*\* Wherever residential, industrial, or agricultural structures are located within or adjacent to trees and other combustible vegetation.



fire, mechanical treatments, and fire to achieve resource objective could be used to restore fire's ecological role and reduce fire hazard to communities. The increased area of appropriate response zone under Alternatives 2–5 would increase the opportunity for a full array of responses when wildfires occur.

Table 4-9 and Figure 4-1 display the output from the FlamMap Model (Finney *et al.* 2004) for flame lengths for BLM lands and the entire planning area (all ownerships). The table displays the current situation as well as the projected fire hazard for the year 2037 for each alternative. This analysis assumes that prescribed fire treatments would reduce anticipated flame lengths by one category, and that mechanical treatments (i.e., in forest fuels) would reduce the flame length by two categories. Rangeland prescribed fire treatments would occur in category 4 and forest prescribed fire would occur in category 3. Appropriate Response (proposed in Alternatives 2–5) would be implemented evenly across the flame length categories of 3 and 4 (2–4 feet and 4–8 feet respectively). Mechanical treatment in the forest type would be spread between categories 4, 5, 6, and 7. Mechanical treatment in the rangeland would not alter fire hazard.

Based on proposed levels of fuel treatments (see Table 4-5), all alternatives would similarly reduce fire hazard (flame lengths) across BLM lands in the plan area. By the year 2037, flame length categories 1–3 (< 4 feet) would be 59% and 69% for Alternative 1 and the action alternatives, respectively.

### Air Quality Effects on Fire and Fuels

Air quality restrictions are similar across all alternatives and may cause some short-term delays in the implementation of fuels projects. However, they are not expected to reduce the area of fuels treatment.

### Research Natural Area Designation Effects on Fire and Fuels

Under all alternatives, prescribed fire treatments would be allowed in RNAs, but under more stringent conditions than elsewhere. More stringent conditions may increase the difficulty of implementing a prescribed burn within or near an RNA. Most of the RNAs exist in preexisting WSAs (Wilderness Study Areas) that already prohibit the use of mechanical treatment. Since the action alternatives designate greater area as RNA (6,639 acres), slightly less area may be treated under Alternatives 2–5 than Alternative 1.

### Wilderness Characteristics Effects on Fire and Fuels

Under Alternatives 2, 3, and 5, prescribed fire fuel treatments, as well as limited mechanical treatments, would be allowed in areas managed for wilderness characteristics. Currently, the need for mechanical treatments has been identified on 7,001 acres of juniper woodlands and forested areas. Within these 7,001 acres, mechanical treatment would significantly decrease the mortality expected in a forested stand if it were to burn under 90th percentile conditions. In the juniper stands, mechanical treatment would allow fire to burn and move the site toward phase I juniper succession (see glossary).

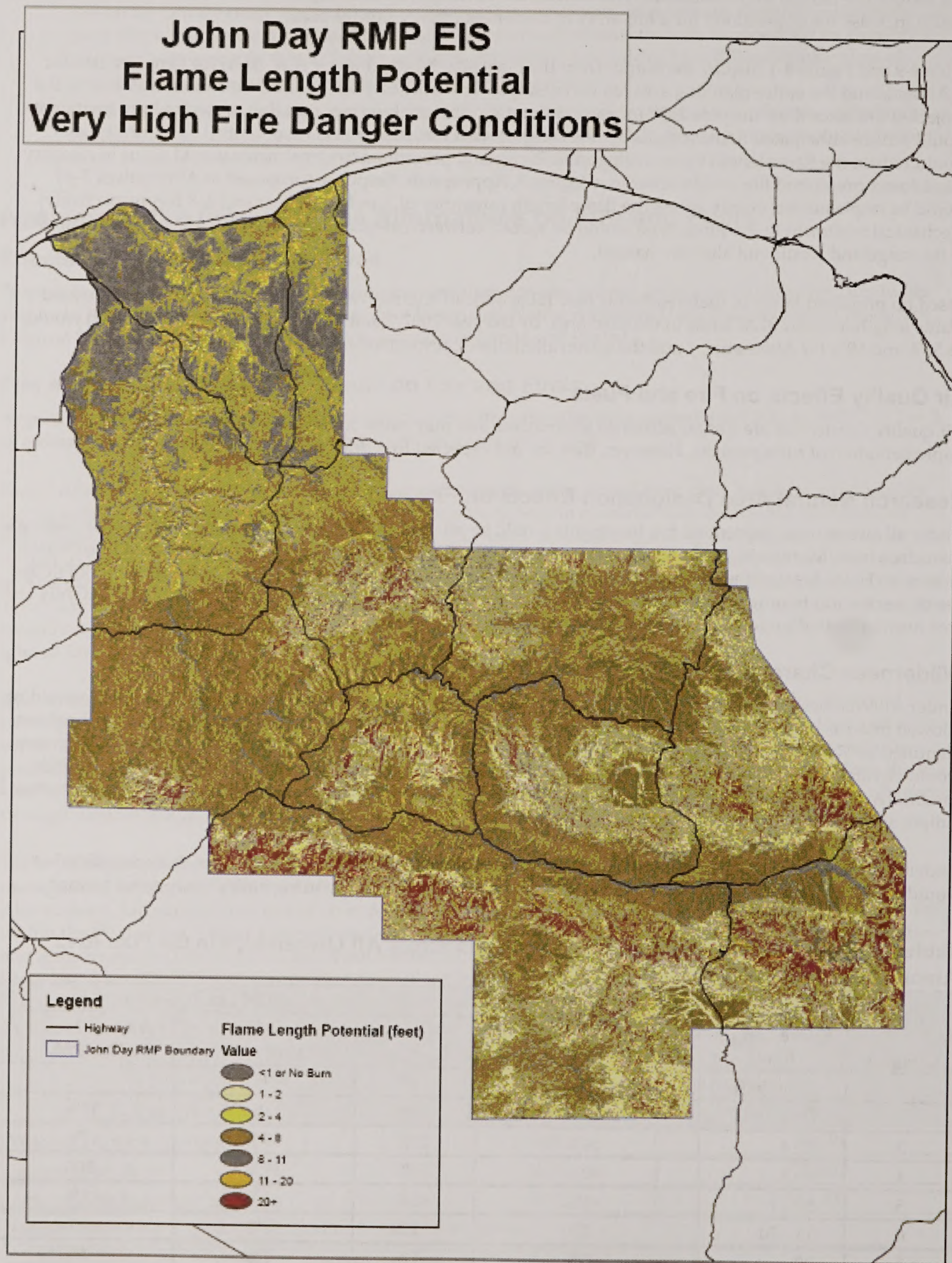
Under Alternative 4, there would be 35,457 acres managed for the protection of wilderness characteristics that would not be available for aggressive fuels treatment. Sites capable of supporting juniper may move toward

**Table 4-9. Relative Fire Hazard on BLM Lands and across All Ownerships in the Plan Area Among Alternatives.**

Category	Flame Length (feet)	Analysis Area Current (all ownerships)	BLM Lands		
			Current	Alternative 1 Year 2037	Alternatives 2-5 Year 2037
1	0 (no burn)	16%	9%	9%	9%
2	0 - 2	16%	9%	11%	13%
3	2 - 4	24%	25%	39%	47%
4	4 - 8	40%	56%	39%	29%
5	8 - 11	<1%	<1%	<1%	<1%
6	11 - 20	1%	1%	1%	<1%
7	20 +	3%	1%	1%	1%



Figure 4-1. FlamMap fire hazard for the John Day Basin plan area.





phase III juniper succession (see glossary). In forested areas, hazardous fuels buildup may increase the risk of stand-replacing and uncharacteristic wildfire. Alternative 1 does not protect any areas found to possess wilderness characteristics. There are 16,015 more acres of lands managed for wilderness characteristics under Alternative 4 than under Alternatives 2, 3, and 5, making it more difficult to return or maintain stands in an FRCC1 condition.

### Lands, Realty, and Land Tenure Effects on Fire and Fuels

The criteria for acquisition and disposal of lands proposed under Alternatives 2–5 would result in larger, more contiguous blocks of BLM land than Alternative 1. This would facilitate a wider range of response to unplanned ignitions under Alternatives 2–5 than Alternative 1.

### Visual Resource Effects on Fire and Fuels

Assignments of Visual Resource Management (VRM) classifications of Class II increase cost and prohibit broad scale juniper treatment relative to VRM Classes III and IV. This results in limited options for mechanical fuels treatments. VRM classifications only vary by alternatives on acquired lands along the North Fork John Day River and in the areas identified for protection of wilderness characteristics. The VRM Class II designation in these areas would reduce the likelihood of fuels treatment on 160,199 acres under Alternatives 2, 3, and 5; on 165,022 acres in Alternative 4; and on 103,645 acres under Alternative 1 (see Table 4-10). Areas in VRM Class I do not differ between alternatives and would not allow for mechanical fuels treatment.

**Table 4-10. Size of VRM Class Zones by Alternative (acres).**

Visual Resource Management Class	Alternative 1	Alternatives 2, 3, and 5	Alternative 4
Class I	95,893		
Class II	103,645	160,199	165,022
Class III	174,989	150,994	150,972
Class IV	82,306	49,285	44,484

### OHV Use Effects on Fire and Fuels

The use of OHVs can lead to human-caused fires. Under Alternative 1, there are 234,272 acres designated as Open to OHV use. Under Alternatives 2–5, off-road OHV use would be largely concentrated in designated areas (up to 315,020 acres, depending on alternative). Concentrated use would create the potential for more fire starts in areas designated as Open. Where OHV use is Limited to designated roads and trails, the potential for fire starts would be aligned along designated roads and trails. Under Alternatives 2–5, fewer human-caused ignitions may occur outside of designated trail systems relative to Alternative 1. Under all alternatives, enforcement of existing public use restrictions on OHVs is expected to mitigate the risk of human-caused fires.

### Wildlife Effects on Fire and Fuels

Under all alternatives, seasonal restrictions for travel may impact the timeliness of the implementation of fuels projects. Impacts would be negligible because most of the closures take place in the winter when access is difficult due to impassable road conditions. In any case, areas with seasonal closures project planners would need to allow for a longer duration of time to complete fuels projects.

### Access and Travel Management Effects on Fire and Fuels

Under the action alternatives, the closure of some existing roads may delay response efforts. If a road is obliterated or “ripped,” a dozer may be needed to reopen it during a fire incident. Depending on the nature and location of the fire, this may delay response efforts longer than under Alternative 1.

### Cumulative Effects

The Ochoco, Malheur, Umatilla, and Wallowa-Whitman National Forests have increased the acres treated for hazardous fuels reduction and restoration of fire-adapted ecosystems, including prescribed fire and mechanical fuels treatments. This would result in a potential cumulative effect on fire regimes, vegetation and habitat quality and distribution, including possible degraded habitat opportunities in the short term, followed by improved conditions across the landscape in the long term.



As mechanical and prescribed fire treatments occur across the landscape, ecosystems would tend to be more resilient to broad scale disturbances from fire, with more opportunities to limit wildland fire growth using treated areas as control lines. These actions would also begin to include fire as part of natural ecosystem processes and result in more natural vegetation and ecosystem dynamics across the landscape.

Prescribed burning would produce smoke, but as ecosystems are restored and fire sizes and intensities decrease there is consequently a potential for a decrease in smoke from wildland fires.

## Aquatic Resources

### Introduction

Analysis of the environmental consequences of the alternatives on aquatic resources considered the following key management actions and related indicators: Fire and Fuels (wildland fire), Aquatic Resources (PACFISH goals, aquatic objectives, PACFISH buffers, and riparian management areas), Wildlife (wildlife road density standards), Livestock Grazing, Recreation Opportunities (OHV use), Access and Travel Management, and Agricultural Land Management.

Indicators used to compare and assess effects on aquatic resources include: source water protection, riparian areas restored from uncharacteristic to native vegetation, instream flows, peak flows, bankfull widths, sediment delivered to stream channels, Proper Functioning Condition (PFC) ratings, residual pool depth, pool frequency, stream function limited by roads, riparian vegetation diversity, large wood, and stream function limited by degraded uplands. These indicators were chosen because they describe water quality and general ecological conditions. These indicators consider limiting factors for fish, water quality, and species identified through the BLM Learning Network (see the Wildlife section of this chapter), and these factors are dependent on stream channels, floodplains, and lentic areas. Key habitat quantity is a limiting factor for all of the John Day River Basin, while sediment loads are a limiting factor in over 80% of the John Day Basin. Habitat diversity, temperature, and stream flow are the other significant limiting factors (BPA 2005).

### Aquatic Resource Indicators

The assumptions and some methodologies underlying these indicators include:

- **Acres of source water protection.** The Source Water Protection Areas (SWPAs) of major municipalities were delineated by ODEQ and the Department of Human Services. The SWPAs include the area that collects and provides domestic water over the course of 20 years. The BLM-managed lands were only present in SWPAs where the source is ground water (as opposed to surface water). Other (small scale) domestic water sources on BLM lands are mostly springs or reservoirs, rarely used for drinking water. Oregon Water Resources Department (OWRD) GIS databases were used to map domestic sources that are not part of a municipality. The acres of source water protected indicate how much each alternative meets legal requirements such as the Safe Drinking Water Act and buffers climatic variations.
- **Acres of riparian areas restored from uncharacteristic vegetation.** Assumptions built into the GIS data used to map vegetation are part of the GIS metadata for this plan. Because of the difference in the mapping scale (large pixels) and relatively narrow shape of riparian areas, the actual amount of uncharacteristic vegetation has a large variance but is assumed to indicate the differences between alternatives. Generally, the uncharacteristic vegetation mapped in riparian areas is assumed to be upland types of vegetation, invasive plants or agricultural fields. Facilities are also found in riparian areas and their footprint occupies space suited for native vegetation. Uncharacteristic vegetation will not result in attainment of the aquatic objective for native riparian vegetation or water quality. Some types of non-native vegetation may achieve objectives for PFC, but may not be considered desired conditions for other values such as fish habitat or water quality limited streams. The acres of riparian areas restored also indicate the resilience of aquatic ecosystems to natural, human, and climatic disturbance.
- **Instream flows measured in cubic feet per second (cfs).** State instream flow goals for the John Day River are assumed to be the flows necessary to support fish and recreation (Lauman 1978). The John Day River and its tributaries yield water from the majority of the plan area. Instream flows are valued for



fish, recreation, and pollution abatement throughout the basin. The energy and sustenance provided by stream flows is the foundation for all aquatic objectives and is the most defining feature of riparian areas. In addition, the amount of water allocated for instream flow indicates the buffer of effects from climate change on aquatic ecosystems. In addition, other uses of water such as restoring riparian vegetation, sustaining local agriculture, avoiding weed invasions, and providing wildlife habitat will also buffer the effects of climate change.

- **Percent increase in peak flows by watershed.** A balance among flow energy, sediment supply, and channel resilience must be maintained for the stream network to remain stable (MacRae 1996). A change in peak flows (stream power) indicates that sediment supply and channel resilience will not be maintained (SCVURPPP 2004). Channels with increased sediment supply and increased peak flows tend to become wider and straighter. If flows are increased, but sediment is no longer available, stream channels tend to become deeper and steeper (incised and removed from their floodplain) (USDI 1998), degrading aquatic habitat. Loss of channel resilience will result in non-attainment of PFC. Altered channel shape and substrate will result in non-attainment of aquatic objectives that are assigned to provide aquatic habitat for fish, native riparian vegetation, instream flows, habitat connectivity, overall channel capability, and water quality to support beneficial uses (John Day Subbasin Assessment 2005). Changes in peak flows also indicate how changes in forest cover from climate change could cumulatively affect aquatic ecosystems. Regression equations (Harris and Hubbard 1983), along with more current precipitation data, were used to model the peak flows resulting from changes in forest cover.
- **Percent increase in stream bankfull width increases by watershed.** The majority of the plan area streams are sediment rich. Sediment discharge to streams increases with increased peak flows. Reductions in vegetative cover and increases in peak flows have been observed to result in wider, flatter stream channels over most of the plan area. A small portion of streams, those dominated by fine sediment, have a tendency to become deeper and steeper when peak flows increase, but this is less common. These relationships have been observed through field assessment of PFC and NEPA (e.g., environmental assessments) documents (e.g., Little Pine Creek and Franks Creek) and calibration from regional regression equations (Castro 1997). Increased bankfull width increases the surface area of water exposed to warm air and increases solar input, thus increasing water temperatures. Water temperature is the most common parameter for non-attainment of water quality standards across the plan area. Elevated water temperature is correlated with other water quality impairments such as low dissolved oxygen and acidic pH. Wide, shallow channels lack pool habitat for fish and would not result in the attainment of aquatic objectives for water quality, channel geometry, surface to groundwater interactions, and fish habitat.
- **Fine sediment delivery to stream channels at stream and road crossings.** Delivery of sediment to stream channels reduces the quality of aquatic habitat (Mebane 1999). While sediment is produced on all roads, delivery to streams becomes a function of the distance between roads and streams. The greater the distance, the larger the filtering capacity of the watershed and the less likely that sediment will reach the stream network. Roadside ditches and culverts that deliver flows to streams reduce the filtering capacity of the watershed (Schiess 2004). In general, sediment from roads within 100 feet of a stream crossing is assumed to reach the stream channel. Analyzing distances greater than 100 feet or projecting different climates did not vary the proportional differences between alternatives. Water Erosion Prediction Project (WEPP) analysis (see Introduction to this chapter) can be used on a site-specific basis to determine the potential for sediment delivery to streams. The values displayed for "sediment delivery to stream channels" throughout this document were modeled using WEPP. The values approximate actual conditions for the plan area. The WEPP model has been used and checked in site-specific environmental analyses (e.g., Little Pine Creek and Franks Creek) within the plan area. These values are used for broader scale analyses of effects between alternatives.
- **Miles of stream near desired residual pool depth.** Pool depth is an indicator of broad scale influences affecting aquatic habitat quality. Decreased water velocities in deep pools increases detritus retention and deposition for use by macroinvertebrates (Lemly 2000). Bisson *et al.* (1982) and Nickleson *et al.* (1992) reported a strong preference for deep pools by salmonid fry and juveniles during both summer and winter. Hayman *et al.* (1996) reported high use of this habitat type by 0-age juvenile salmonids (Mobrand Biometrics 2003). During drought or periods of low flow, habitat is reduced. Deeper pools, such as those formed by large wood, provide more habitats for fish and other organisms during these critical periods. Shallower pools may result in higher mortality from predation or elevated water temperatures (Rosenfeld 2000). Many streams in the plan area have interrupted flow (see glossary), and residual



pool depth is an important indicator and measure of aquatic habitat quality (Cramer and Ackerman, in review 2008), especially in the face of climate change. Residual pool depth information was surveyed using ODFW protocol.

- **Pool frequency.** Pool frequency is assumed to be an indicator of undisturbed, high quality habitat and desired riparian condition. Pools provide thermal refugia (e.g., cooler water in the summer and warmer water in the winter) (Rosenfeld 2000). In undisturbed areas, stream reaches generally have higher pool frequencies (Wood-Smith 1995). In forested regions, large wood aids in pool development. In non-forest systems, riparian vegetation and channel meanders lead to pool formation. Pool frequency information was surveyed using ODFW protocol.
- **Miles of stream at PFC.** PFC is an indicator of the basic stream function required to provide for beneficial uses such as fish habitat, water quality, wildlife, and other values. Riparian-wetland areas that are not at PFC cannot provide the above values on a sustained basis. When a riparian-wetland area is at PFC, this indicates that the current management is allowing recovery toward potential or site capability. Although site potential may change in response to climate and other factors, the physical processes discussed during a PFC assessment are constantly relevant (see Chapter 3, Figures 3-20 and 3-21). Sustaining some values, such as fish habitat or water quality limited streams, may require conditions closer to potential natural community than PFC.
- **Miles of stream reaches with roads limiting stream function.** To differentiate between alternative approaches to address the effects of roads on streams, the existing PFC inventory was used to indicate where roads limit stream functions. This is an indicator that helps measure the attainment of the PFC objective as well as aquatic objectives for channel condition, sediment and water quality.
- **Riparian species composition and diversity.** Willows, alders, sedges, and rushes along streams can effectively dissipate stream energy and provide abundant fish and aquatic habitat. Riparian vegetation is important to the formation and maintenance of pools, side channels, and backwaters. Diverse vegetation provides structural complexity and cover for fish and other aquatic species. Riparian vegetation regulates sediment transport of gravels and organic matter, influencing their effect on other physical and biological processes. As diversity of riparian vegetation increases, so does aquatic habitat (Moberg Biometrics 2003).
- **Miles of stream needing large wood or instream structure in 30 years.** Large woody debris is an important structural component of riverine ecosystems in the plan area. It has key functions in forming channel types and habitat units, particularly in the creation and maintenance of pools, side channels and backwaters. It provides structural complexity and cover for aquatic organisms. It regulates the transport of sediment, gravel, and organic matter, influencing their effects within physical and biological processes. The ability of large wood to perform these functions depends in part on its abundance, size and type of wood, and size and geomorphology of the stream system (BPA 2005).
- **Miles of stream where upland influences are degrading stream condition.** Changes in upland watershed condition can influence the infiltration, evaporation, and subsurface flow of water on its route to stream channels and wetlands. Plan area PFC assessments indicate where changes in watershed conditions have degraded aquatic conditions.

## Analysis of the Effects of the Alternatives on Aquatic Resources

The analyses described herein are focused on actions of potential measurable environmental consequence. Under all alternatives, the following resource uses would have no effect on aquatic resources or their effects would be eliminated by the use of BMPs: Air Quality, Vegetation—Special Status Plants, Wild Horses, Cave Resources, Special Designations, Wild and Scenic River Designation, Native American Uses, Paleontological Resources, Minerals, and Lands and Realty (including Renewable Energy).

### Soil Management Effects on Aquatic Resources

Management direction of Alternative 1 to maintain soil productivity and minimize erosion does not specify limits for soil disturbance other than to minimize it and apply BMPs. Thus, it is not possible to quantify effects of Alternative 1 on aquatic resources. Alternative 2 is much more specific in terms of measurable actions and objectives.

This standard under the action alternatives would likely decrease sediment input to stream channels at road crossings and decrease the miles of stream where roads or upland watershed conditions are degrading



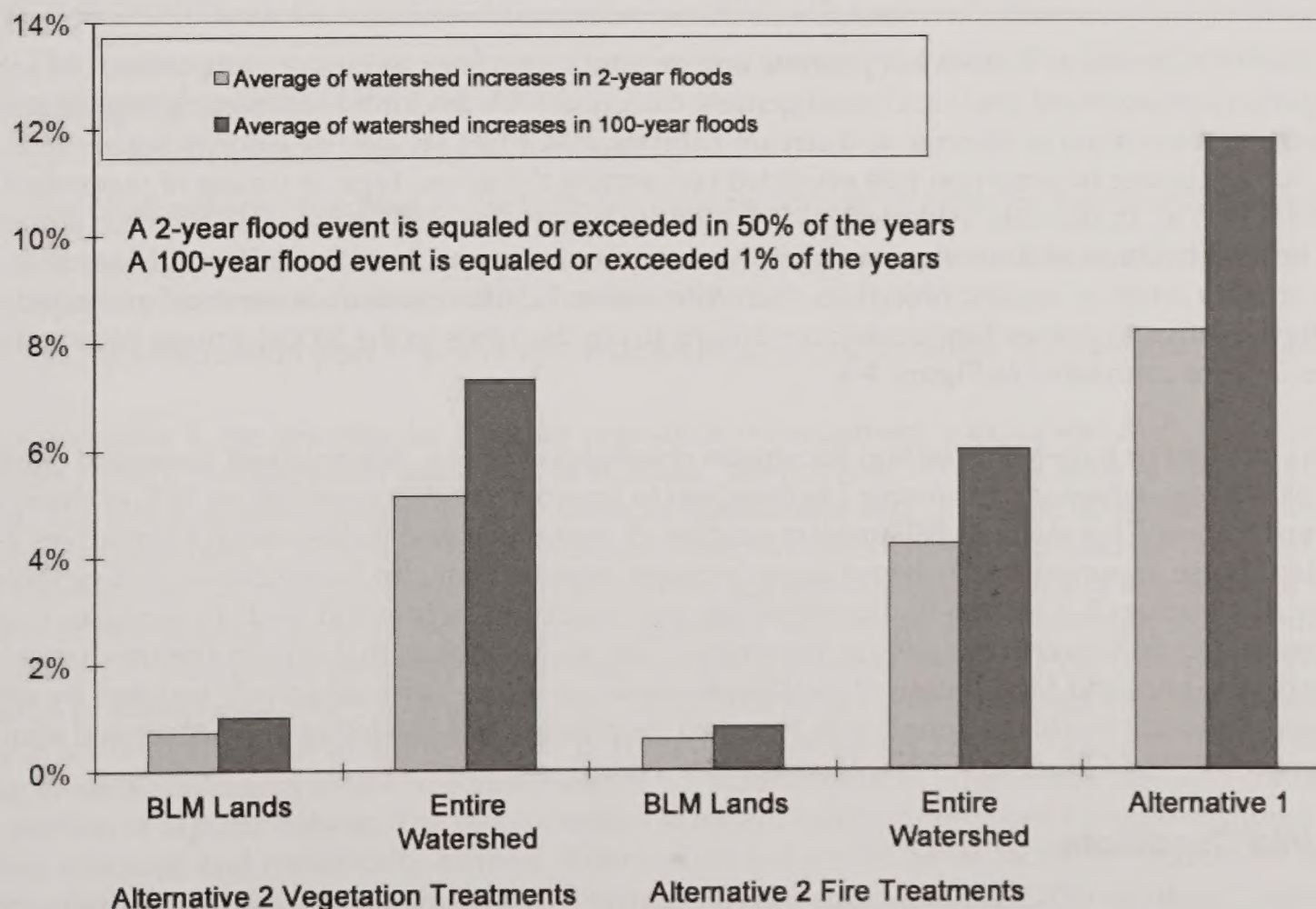
stream channels. Under Alternatives 2–5, facilities with excess erosion potential are removed or rehabilitated. Implementation and effectiveness monitoring of BMPs minimizes the risk, but does not eliminate the potential for sediment input to streams (Rashin 2006). Therefore, under Alternative 1, the risk of sediment delivery to streams would increase over the life of the plan. Under Alternatives 2–5, the risk of sediment delivery would remain constant over the life of the plan.

### Vegetation Treatment Effects on Aquatic Resources

Vegetation treatment under Alternative 1 is more likely to remove a larger proportion of forested watershed cover than Alternatives 2–5. Alternative 1 is focused on commercial timber production, limited treatment, and wildfire response. These factors would likely result in broad-scale removal of forest watershed cover through uncharacteristic wildfire or timber harvest. Alternatives 2–5 accelerate vegetation treatment but remove less forested watershed cover over time because treatment areas would be smaller. A reduced risk of fire as a function of vegetation management under the action alternatives would lead to less catastrophic loss of cover from across the landscape compared to Alternative 1. Fuels and vegetation treatments to achieve ARV under Alternatives 2–5 would maintain large overstory trees, and prescribed fire and vegetative treatments would mimic natural disturbances. Alternatives 2–5 recognize that all seral stages are integral to watershed function. Vegetation management under Alternatives 2–5 would move 58 miles of stream toward PFC by restoring upland watershed conditions that currently contribute to non-attainment of standards.

Peak flows were modeled for 5th field watersheds (up to 250,000 acres) in the plan area. Increases in peak flows at various return intervals are displayed in Figure 4-2. Alternative 1 increases peak flows more than Alternative 2 because more large fires remove forest cover. Variations in peak flow could be exacerbated under all alternatives, but most greatly by larger wildfires in Alternative 1. However, peak flow increases are generally short lived because of restoration of watershed cover within approximately 10 years (Lewis 2001). This quick recovery limits the amount of time watersheds are at risk to increased peak flows from major precipitation events. Recovery time may be altered by climate change.

**Figure 4-2. Components of increases in peak flows as a result of vegetation and fire treatments for 2-year and 100-year floods between alternatives.**





Although removing forest cover has been observed to increase peak flows, it is important to note that none of the alternatives increased peak flows beyond the variance of the peak flow model (Hubbard and Harris 1978, Grant *et al.*, in press). Channel width would increase half as much as peak flows increase.

Alternative 1 includes general standards for vegetation treatment. Some prescriptions for improving watershed cover are included in existing RMPs. Under the action alternatives, vegetation treatment standards are tied to aquatic objectives. As a result, they better complement aquatic objectives. Implementation of the standards and BMPs would benefit riparian conditions.

Broad species diversity of native riparian plants would be a consequence of Alternatives 2–5. Implementation of the action alternatives would enhance 113 miles of stream that would not be affected under Alternative 1.

Vegetation management under Alternatives 2–5 is more likely to increase the amount of older aged forests than Alternative 1. Model results illustrate that fish overwintering in streams among older-aged dry forests have significantly higher survivals than those over-wintering in young forests (Paulsen and Fisher 2001). Therefore, upland vegetation management under Alternatives 2–5 is more likely to improve overwinter fish survival than Alternative 1.

## Fire and Fuels Effects on Aquatic Resources

In general, Alternatives 2–5, through the Aquatic Conservation Strategy (ACS), provide more geographically specific management and active restoration than Alternative 1. The ACS includes the six key aquatic components of the ICBEMP Strategy for incorporating ICBEMP science into RMP revisions: riparian conservation areas, strong hold areas, multi-scale analysis, restoration priorities, management direction, and monitoring. The ACS makes steelhead population strongholds a priority for restoration. This would provide high quality habitat for species, and support expansion and restoration of steelhead to adjacent watersheds. The ACS identifies Riparian Management Areas (RMAs) and allows for adjustment to RMAs to reflect site conditions recognizing watershed wide riparian conditions and trends (Quigley and Arbelbide 1997, Megahan and Hornbeck 2000, Spence *et al.* 1996, USDA Forest Service 1997). The ACS uses multi-scale analysis to evaluate existing conditions, factors limiting aquatic species populations, resource risks, management needs, and restoration opportunities. Management direction, desired conditions, objectives, and management actions provided in the ACS would result in actions consistent with, and contributing to achieving those desired outcomes and conditions.

The PACFISH (part of Alternative 1) does not propose any ground-disturbing actions or restoration, but sets in place certain riparian management goals and management direction with the intent of arresting degradation and initiating passive restoration of riparian and stream habitats. PACFISH set interim priority watersheds for restoration, but no further information was provided concerning the scope, type or timing of watershed restoration (NMFS 1995 a). In contrast, Alternatives 2–5 identify restoration actions required to attain aquatic objectives. Full implementation of the restoration actions and other components of the ACS would result in attainment of a broader scope of aquatic objectives than Alternative 1. Differences in current and projected stream channel conditions relative to proper functioning conditions (from the 1980s to the 2000s) among Alternative 1 and Alternatives 2–5 are contrasted in Figure 4-3.

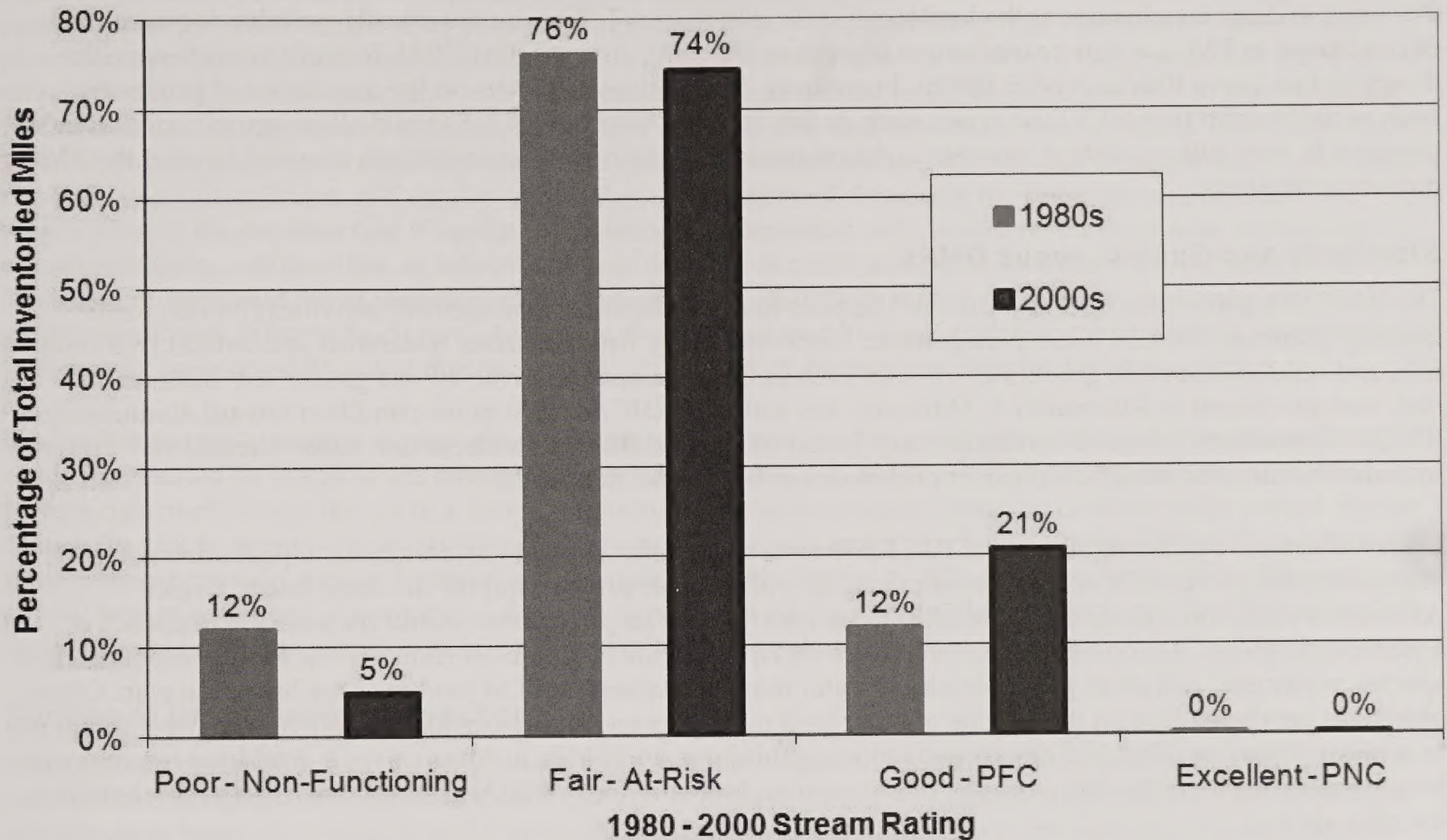
Alternative 1 has resulted in largely fair ratings for stream channel conditions. Alternative 1 improved condition ratings on 20% of streams, whereas Alternative 2 is designed to improve condition ratings on 35% of the streams through active restoration. This assumes full implementation of restoration and BMPs under Alternatives 2–5 over the life of the plan. These assumptions are based on an increase in restoration, updated science, and geographic specificity under Alternatives 2–5 and on findings that suggest increasing large wood leads to increases in pool frequency approximately 50% over other passive treatments. The assumption is that certain stream channel types, particularly step-pool and high sediment yielding systems, would be more effectively restored by active rather than passive restoration. This assumption is based on monitoring and modeling of adjacent and similar landscapes (Wondzell 2007, Hilderbrand 1998, Montgomery 1995).

## Riparian Desired Conditions

Proper Functioning Condition (PFC) is not included in Alternative 1 as a method to compare current to proper functioning ecological condition, except in the context of grazing under the PACFISH amendment. Alternatives



**Figure 4-3. Change in stream channel condition for streams inventoried in 1980 and 2000 and projected to 2020 for the action alternatives only.**



2-5 specifically incorporate national guidance on PFC into the RMP. Under Alternatives 2-5, the foundational objective for attaining PFC would be to provide the greatest diversity of vegetation and habitat for wildlife, fish, livestock and watershed protection (BLM Riparian-Wetland Initiative 1992). The use of PFC as a management objective is dependent on the following key items included in the aquatic strategy under Alternatives 2-5:

- The required number, type, and experience level of personnel conducting PFC assessments to ensure quality and validity of the assessment.
- PFC does not replace quantitative monitoring.
- Use of all aquatic objectives as the basis for making grazing or other management changes.
- Incorporation of other measures and tools for assessing the implementation, effectiveness, and validity of aquatic objectives, including biologic components.
- PFC is a short-term plan objective that enables long-term attainment of desired conditions.

Under Alternative 1, the objective for riparian vegetation management is to achieve mid- to late seral conditions ("Excellent - PNC" in Figure 4-3) along 60% of streams. Alternatives 2-5 aim to achieve this objective on 5% of streams. The action alternatives would provide more measurable and attainable objectives for the plan area than would Alternative 1. Although 95% of riparian areas would not develop to mid- to late seral conditions under Alternatives 2-5, riparian areas would achieve an appropriate distribution of successional stages, and would be at PFC or on an upward trend, regardless of their seral stage. While both alternatives utilize BMPs, Alternatives 2-5 incorporate geomorphic information about streams, through PFC and specific objectives, into the design of site-specific BMPs (Agouridis *et al.* 2005). This incorporation is more effective at restoring water quality at individual sites. Managing a larger portion of the landscape toward PFC over the life of the plan and moving toward attainment of the 10 aquatic objectives would result in improved watershed condition across a larger portion of aquatic habitat. The 60% potential standard under Alternative 1 would continue to be difficult to define, measure, and realistically achieve. Alternatives 2-5 would better facilitate measurable and achievable restoration of aquatic conditions.



### **Riparian Management Objectives**

Alternative 1 (PACFISH) contained set numbers for Riparian Management Objectives (RMOs) while Alternatives 2–5 serve to draw conclusions at the landscape scale. Alternative 1 does not specifically prohibit degradation of conditions in RMAs where management objectives are being attained. PACFISH does not provide specific direction to achieve RMOs (NMFS 1995b). In contrast, Alternatives 2–5 focus on the restoration of processes, such as sediment transport, or use types, such as fish species. Alternatives 2–5 would allow aquatic conditions to progress to their full capability; whereas in Alternative 1 aquatic conditions might not improve beyond the RMO numeric standards.

### **Standards and Guides versus BMPs**

The PACFISH guidance under Alternative 1 applies to a specific set of management activities (timber, roads, grazing, minerals, fire and fuels management, lands and realty, riparian areas, watershed and habitat restoration, fish, and wildlife). Specific guidelines for uses such as OHV, juniper removal, oil and gas, or any subsequent new uses are absent in Alternative 1. However, any action in RHCAs must move condition toward attainment of RMOs. Alternatives 2–5 use Interdisciplinary Teams (IDTs) and BMPs to address new uses. Alternative 1 does not include direction for modification or improvement of BMPs and standards.

Under Alternative 1, the eight goals of PACFISH were stringently applied to watersheds with anadromous salmonids and the remainder of the area managed with a lower priority, but for the same intent. Under Alternatives 2–5, the aquatic objectives applied across the landscape together would increase the resiliency of aquatic ecosystems. Action alternative objectives for riparian function, habitat connectivity, locally important fish species, water use, and clean public drinking water may be attained on BLM land over the life of the plan. Other objectives are dependent on the actions of other land managers and/or require longer time frames (over 100 years) to achieve objectives. The ACS objectives, actions, guidelines, and BMPs in Alternatives 2–5 address requirements for all organisms identified through the BLM Learning Network (see Wildlife section) that use riparian habitat in the plan area.

### **Measurable Indicators of Progress (Measures of Attainment)**

Alternative 1 is guided by PACFISH goals that lack measures to track attaining them. In contrast, Alternatives 2–5 are guided by aquatic objectives that have “measures of attainment” to track progress in achieving management objectives through the life of the plan. Alternatives 2–5 provide guidance for managing water quality limited streams to achieve beneficial uses and meet state water quality standards and to protect public drinking water supplies, whereas Alternative 1 does not. Alternative 1 emphasizes restricting uses to avoid impacts on anadromous fish and water quality. Alternatives 2–5 update the restriction on uses by applying BMPs with new science and uses multiple scale analysis to tailor the BMPs to this particular plan area. Alternatives 2–5 prescribe actions to be taken to restore RMAs within the plan area, while Alternative 1 focuses on modifying uses to avoid negatively affecting aquatic resources.

### **Water Quality and Beneficial Uses**

Under Alternatives 2–5, the objective for water quality that provides for beneficial uses, the sum of the actions, and BMPs would result in attainment of water quality standards where BLM is the major landowner. Where BLM is not the major landowner, BLM would not exceed the maximum daily load allocation, and may help facilitate attainment of this objective through cooperative efforts in the watershed. The amount of acres in uncharacteristic vegetation would be less in Alternatives 2–5 than Alternative 1. Under existing RMP direction (Alternative 1), 60% of streams are managed to “potential” and vegetation is not addressed on 303(d) listed streams. In Alternatives 2–5, 100% of streams have their vegetation managed to capability within natural disturbance regimes. Based on the biophysical settings (see Appendices E and F), 3,100 acres of uncharacteristic riparian vegetation may be restored to characteristic vegetation under these alternatives.

Under Alternatives 2–5, actions and BMPs for water quality and beneficial use would result in stream channels in or moving toward PFC and potential natural conditions (Figure 4-3). Active and passive restoration of head cuts would restore vertical stability on 22 miles of stream channel.



### **Stream Channel Integrity**

Linear features (e.g., roads and trails) can limit physical function of stream channels. Alternative 1 emphasizes road closures for roads contributing to nonattainment of RMOs by prioritizing roads for closure, stabilization, or obliteration. Alternative 1 would protect stream channels from the construction of new roads that could affect stream function, but only about five miles of streams have had related roads decommissioned to restore stream function to date. Alternatives 2–5 identify criteria, a decision tree, and actions to manage roads. Based on existing PFC information, 40 stream miles have limited physical function because of roads that limit the ability of stream channels to route sediment and convey stream flow. Alternatives 2–5 include the linear feature decision tree. Application of the decision tree, if applied with today's information only, would result in closure, re-routing, decommissioning, obliteration, or rehabilitation of 56 miles of roads and better facilitates. In addition, those 40 stream miles would move toward PFC. Rerouting roads away from stream channels would reduce annual average sediment delivery by 50 tons. Assuming that PFC assessments are updated and expanded, more miles of stream may be restored by using the decision tree of the action alternatives over the life of the plan.

Under Alternative 1, roads that may affect watersheds are improved to avoid effects to stream function. Five roads maintained by the BLM are affected. Under Alternatives 2–5, BMPs are expanded to include all linear feature construction and design in a more comprehensive manner. Implementation of these BMPs would further reduce the risk to streams from attaining PFC as a result of roads and trails. For example, ditches 50 feet before a stream crossing would reduce potential sediment delivery to streams by 50% (reduced from 430 to 206 average annual tons of sediment). Alternative 1 does not specifically address restoration of head cuts. In Alternatives 2–5, restoration of head cuts would restore vertical stability to 22 miles of stream.

### **Surface to Groundwater Interactions**

Management under Alternative 1 focuses on restoration of in-channel habitat for anadromous fish but does not consider the risks and interdependencies of channel structures on channel function. Alternatives 2–5 emphasize less intrusive restoration techniques for restoring stream channel and floodplain connectivity. The techniques complement other ACS objectives and present lower risks to channel function than Alternative 1. The actions under the action alternatives are designed specifically for plan area streams and ecosystems. Alternatives 2–5 incorporate elements beyond the general guidance provided in PACFISH and existing RMPs. Therefore, Alternatives 2–5 would be more effective at restoration than Alternative 1.

### **Water Rights**

Management under Alternative 1 provides guidance for water rights on the areas covered by the John Day Wild and Scenic River Plan and the Sutton Mountain CRMP. Alternatives 2–5 extend that same direction across the remainder of the plan area and provide more specific direction for the types of beneficial uses of water and water rights (see Table 4-11). The amount of water withdrawn from any individual source is protected from affecting instream flow goals by the table of water use stipulations included in Alternatives 2–5. Alternative 1 only contains flow stipulations for the Sutton Mountain and Wild and Scenic River Plan areas.

### **Lentic Areas**

Management of lentic areas under Alternative 1 was not specified in current RMP direction and was fairly generic in PACFISH. Alternatives 2–5 provide more specific measures for achieving desired riparian condition. Alternatives 2–5 introduce reservoir safety and construction BMPs. These would reduce risks of dramatically increased peak flows and delivery of sediment to stream channels from failed reservoirs. Overall, the plan area

**Table 4-11. Comparison of Water Right Uses Between Alternatives.**

Water Right Use	Cubic Feet per Second (CFS)	
	Alternative 1	Alternatives 2–5
Irrigation and Wildlife	5	0-10
Instream Leases	11.5	12-17
Mining	12	0
No Management	5.5	0
Ag Land Disposed	2	3



has very few lentic areas, but springs and seeps are common. Management actions prescribed under the lentic objective of the action alternatives is more likely to move wetland vegetation and aquatic conditions toward attainment of desired conditions than Alternative 1.

### ***Native Riparian Plant Communities***

Under Alternative 1, current RMP guidance and PACFISH management of riparian vegetation focuses on riparian habitat condition for anadromous fish species and general ecological diversity and productivity. Alternative 1 relies on passive restoration of channel conditions. Alternatives 2–5 emphasize the use of native riparian plant species unless ACS objectives cannot be attained without the use of nonnative species. The actions identified in Alternatives 2–5 would move stream channels toward potential natural vegetation by incorporating natural disturbance regimes and implementing active restoration. The appropriate composition of vegetation would be restored to approximately 70 miles of stream currently lacking potential natural vegetation. Alternatives 2–5 require woody riparian species to achieve unarrested and/or released growth forms (see glossary) and restore their potential stature. This would move almost 100 miles of stream that currently lack sufficient age class distribution towards attainment of PFC. In addition, restoring and maintaining riparian areas would provide important corridors for aquatic species as they adapt to climate change.

### ***Vegetation for Physical Stream Function***

Restoration actions for large wood are not prescribed in Alternative 1. Alternatives 2–5 prescribe use of invading conifers and other sources of large wood to restore pool habitat. This would shift attainment of pool desired conditions for restoration work from approximately 75 to 90%.

Under PACFISH, Alternative 1 contains PFC as a standard for grazing uses, but does not apply the standard to other uses in the landscape. Alternative 1 also does not include provisions for physical function ratings.

Alternatives 2–5 prescribe changes in management to ensure the condition of riparian vegetation would dissipate energy and build stream channel habitat. Alternatives 2–5 include specific restoration actions, such as restoring alder and cottonwood to restore physical function of riparian vegetation. Alternative 1, under PACFISH, was not designed to, and does not include this specificity. Alternatives 2–5 would result in 50% of the plan area streams attaining PFC and providing physical stream function. Complete attainment of objectives over the life of the plan may not occur under any alternative due to the time and disturbances required to grow the large plants to meet this objective.

### ***Fish Habitat***

Alternatives 2–5 contain actions for restoring watershed cover for fish habitat, while Alternative 1 includes fish habitat restoration focused on construction of weirs, deflectors, and other artificial instream structures. These types of structures may not be appropriate for many miles of stream in the plan area. Alternatives 2–5 emphasize using passive restoration and halting the source of degradation before using active restoration. Under Alternatives 2–5, restoration actions should improve timing, intensity, and duration of peak flows and improve late season flows to attain instream flow objectives. Active restoration work would be designed in concert with the entire landscape. Alternatives 2–5 also contain numeric criteria for spawning habitat that was not included in Alternative 1. Criteria for spawning habitat improvement would ensure attainment of healthy fish habitat and would provide a measure for stream channel sediment delivery.

### ***Riparian-Dependent Biotic Communities***

Alternative 1 minimizes impacts to riparian areas and water quality. Alternatives 2–5 protect riparian areas and add a proactive aquatic and riparian restoration component. Alternatives 2–5 include provisions for addition of wood to streams contributing to a 50% increase in pool habitat where large wood is lacking. Alternatives 2–5 restore stream channel crossings, in combination with the crossings of other landowners, such that 90% of stream routes in each 5th field watershed have crossings that accommodate the 100-year floods, and route sediment and large wood in accordance with the natural geometry, slope, and bed stability of the channel. Achieving these objectives is dependent on other landowners, with BLM contributing to restored conditions on approximately 10% of streams. Passage requirements under Alternative 1 are proposed solely for passage of anadromous fish. Alternatives 2–5 use natural stream bed stimulation, which would provide passage for all aquatic species.



### **Safe Drinking Water**

Alternative 1 does not include management direction for protection of domestic water sources. Alternatives 2–5 afford protection to 6,700 acres of public Source Water Protection Areas and 200 acres of other domestic water sites on BLM.

### **Riparian Management**

Riparian Management Areas include a larger area and more affected resources under Alternatives 2–5 than Alternative 1. Alternative 1 (both existing RMPs and PACFISH) manage for the primary use of anadromous fish and meeting Clean Water Act requirements. Alternately, Alternatives 2–5 address fish and water quality, but also promote safe drinking water, judicious use of water rights, protection of physical function for all riparian-dependent species, and floodplain restoration. Under Alternative 1, areas reserved for riparian management vary from 25 to 300 feet on either side of stream channels and lentic areas. The extent of the riparian management areas under Alternative 1 would range from 25 to 300 feet slope distance or the 100-year floodplain, whichever is greater.

There is considerable variation in the literature regarding the width of riparian area necessary to maintain water quality and aquatic habitat condition (FEMAT 1993). A study of riparian management area widths reveals that resource requirements of channel complexity, nutrient, sediment and temperature buffering, general ecosystem function, anadromous fish, mammal, bird, reptile amphibian and bird habitat vary across the landscape (Santa Clara County 2000). Variable widths of Alternative 1 afford variable resource protection. Based on a set of 57 studies, Alternative 1 affords resource protection that decreases from 80 to 0% as widths decrease. Conversely, the majority of objectives for riparian areas in the action alternatives are met within the ACS width of 300 feet (plus the width of the 100-year floodplain) of perennial and intermittent stream channels (Figure 4-4) (County of Santa Clara Planning Office, 2003). Widths of the flood-prone area plus 300 feet under Alternatives 2–5 would be sufficient to address factors of soil stability, water quality, microclimate, litter fall, root strength, shade, and large wood (pers. comm. Scott Hoefer NMFS 2008). All alternatives have sufficient RMAs to protect salmonid habitat in forested watersheds (Pollock and Kennard 1998).

The alternatives differ in the criteria used to delineate RHCAs (or RMAs). Alternative 1 RHCA widths vary depending on the presence of fish and whether flow is intermittent or perennial. Alternative 1 protects key watersheds, which are those with salmonid habitat, and has smaller widths along intermittent streams than perennial streams compared to the action alternatives. As a result, Alternative 1 management actions along intermittent streams could affect stream temperature and recruitment of large wood, increase sediment generation and reduce sedimentation of stream (NMFS 1995a). In contrast, Alternatives 2–5 extend the protection to all watersheds in the plan area, regardless of the presence or absence of fish. Alternatives 2–5 do not differentiate between streams of varying flow regimes or fish presence when delineating RMAs and provides sufficient protection for all flow regimes and fish (NMFS 2008). RMA widths address multiple resource concerns and protect multiple species (see Appendix Q and Figure 4-4).

Alternative 1 does not include a clear decision framework for mitigating effects originating outside RHCAs. Alternatives 2–5 set 20 acres as a trigger for using riparian management objectives as criteria for evaluating effects originating outside RMAs.

Alternative 1 limits management within RHCAs whereas Alternatives 2–5 emphasize attainment of aquatic objectives and restoration. This shift in management focus is enabled by the use of existing subbasin assessments under Alternatives 2–5. Vegetation treatments, roads, and trails within the 300-foot RMAs are proposed throughout the life of the plan. The use of ID Teams and BMPs would allow these uses to attain resource objectives.

### **Transportation and OHV Effects on Aquatic Resources**

The plan area contains streams currently listed as water quality limited under the Clean Water Act 303(d) due to sediment. The action alternatives would contribute to the restoration of water quality in these streams.

For comparing alternatives, sediment from roads and trails within 100 feet of a stream crossing is assumed to reach the stream channel. Although BMPs are assumed to reduce sediment delivery to stream channels, stream crossings increase the risk of effects on aquatic species. The differences in sediment delivery from stream crossings between alternatives are compared in Figure 4-5. Compared to Alternative 1, Alternatives 2, 4, and 5



Figure 4-4. Riparian widths compared to results of 57 studies on minimum widths (distance) required to meet resource requirements of channel complexity; nutrient/sediment/temperature buffering; general ecosystem function; and anadromous fish, mammal, bird, reptile, amphibian, and bird habitat (feet from stream channel).

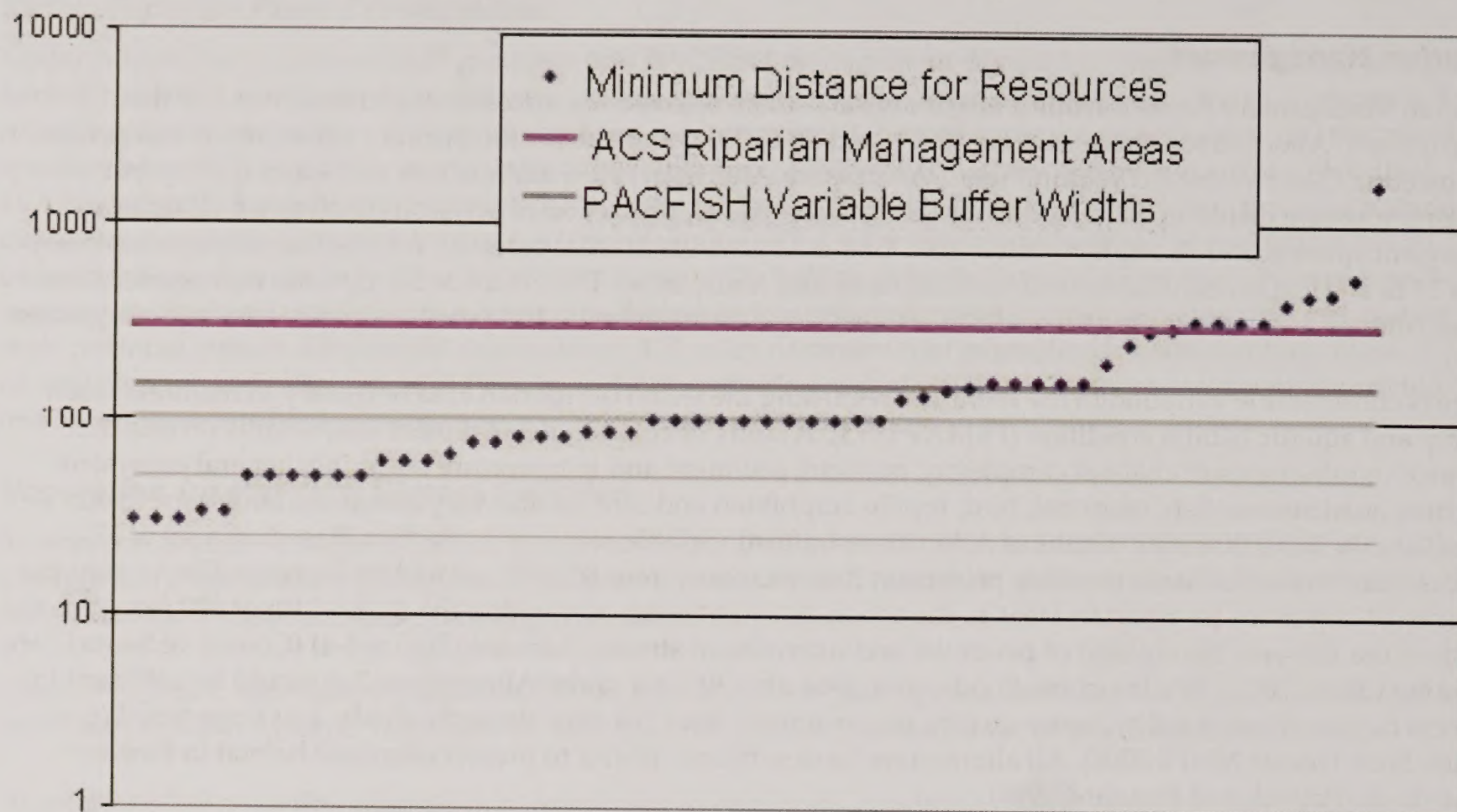
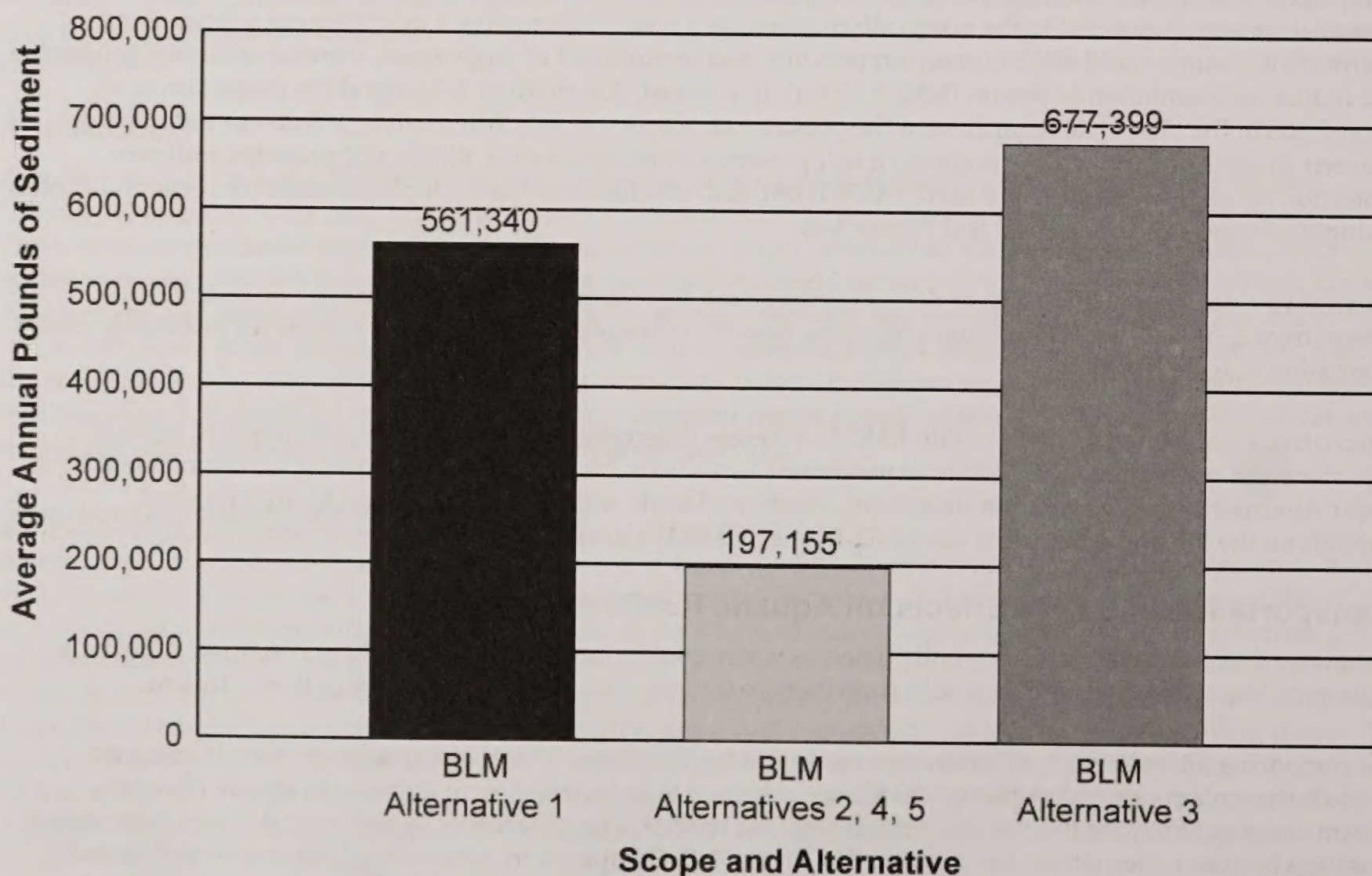


Figure 4-5. Sediment delivery from road crossings to stream channels by alternative. (Wepp Model)





would reduce sediment delivery to streams as a function of road closures. Alternative 3 would result in increased sediment delivery to streams because it would open many stream crossings that are closed under Alternatives 1, 2, 4, and 5.

Open OHV designations in riparian areas allow indiscriminate crushing of riparian vegetation, churn up stream channel habitat, initiate erosion, and remove ground cover (Ouren *et al.* 2007). These effects reduce physical stream function and contribute to non-attainment of PFC. Alternative 1 has 50% of riparian management areas with Open OHV designations. Under the action alternatives, less than 1% of riparian management areas have Open OHV designations (see Table 4-12). The action alternatives would result in more riparian management areas moving to proper functioning condition than Alternative 1.

Under Limited OHV designations, designated trails are likely to cross through riparian management areas. Similar to road crossings at streams, OHV crossings can cause sediment delivery to stream channels. However, very few new stream crossings are anticipated, and the use of BMPs and guidance under aquatic objectives would avoid degradation of physical stream function. Alternative 1 has 36% of riparian management areas with Limited OHV designations. Under the action alternatives, large portions of previously Open areas are converted to Limited OHV designations. The designated trail and stream crossings in the action alternatives would result in more riparian management areas at proper functioning condition or potential than Alternative 1.

The Closed OHV designation ensures no sediment delivery or disturbance of aquatic habitat would occur. The action alternatives include approximately 15% (it ranges from 14 to 19) more Closed areas than Alternative 1 and would reduce the risk of sediment delivery to stream channels and disturbance of aquatic habitat.

Under Alternatives 1, 2, and 3, there is an Open designation on Rudio Mountain. This designation may reduce watershed cover, but the Open areas are small, primarily flat, and some already lack watershed cover. Therefore, it is unlikely that continuing the Open OHV use designation in these areas would translate into measurable differences of peak flows or sediment delivery to stream channels between alternatives. Under the action alternatives, triggers would ensure that the Open OHV designation does not violate water quality standards and ESA guidance.

Little Canyon Mountain is allocated for OHV use in Alternatives 1–4. Anticipated erosion and sediment delivery from OHV use would be isolated, and incremental increases in erosion would be drowned out by the erosion from areas already dramatically disturbed by historic mining and vehicle use. For Little Canyon Mountain and Rudio Mountain, sediment delivery would not be measurably different between the alternatives. All the alternatives would be consistent with direction in Executive Orders 11644 (Use of Off-Road Vehicles on Public Lands, February 8, 1972), 11989 (Off-Road Vehicles on Public Lands, May 24, 1977), and CFR 8342.1. Although Alternative 5 closes Little Canyon Mountain to OHV use, there are not measurably different effects between Alternatives 2–5. All action alternatives minimize effects to soil, watersheds, vegetation, and fish.

Prior to cleanup and active management of the Little Canyon Mountain area a few years ago, the area was used as a dump site for vehicles, refrigerators, appliances, and other rubbish. All alternatives propose continuing active management and the OHV use (mostly from the surrounding communities). Cleanup and active management of the Little Canyon Mountain area would reduce the risk of toxic materials from rubbish being dumped at the site and leaching into groundwater.

Under Alternatives 2-5, OHV use would not retard the attainment of Aquatic Objectives over the life of the plan. New proposed OHV uses, such as specific trails, would be designed to meet aquatic objectives. If necessary, site-specific use of BMPs and guidelines for OHV use would address site-specific risks to water quality and fish

**Table 4-12. Acres of OHV Designations within Riparian Management Areas by Alternative.**

OHV Designation	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Open	61,260	342	294	2	0
Limited	44,401	86,9486	87,579	82,399	88,168
Closed	19,088	37,460	36,577	42,348	36,581



habitat such as excess sediment delivery to the stream channel and water temperature increases from changes in shade and channel geometry.

Due to a combination of factors (OHV closures proposed by the Forest Service for adjacent lands in the plan area, closures on private lands, and BLM closures in the action alternatives), cross-country OHV users may concentrate their use in Little Canyon Mountain and similar areas. Providing areas for concentrated use (2 acres) may improve compliance with OHV closures and designated trail systems across the entire plan area. This would maintain or improve watershed condition across the rest of the public lands in the plan area (2.2 million acres).

### **Wildlife Management Effects on Aquatic Resources**

Alternative 1 does not include road density standards for the plan area. The lack of road density standards may increase road and stream crossings. These increased crossings increase the risk of excess sediment delivery to stream channels.

Under the action alternatives, road densities are prescribed to protect wildlife values. The prescribed road densities of less than 2 miles per square mile are slightly less than some of the existing road densities. By potentially decreasing the number of road crossings, the prescribed road densities would decrease the risk of sediment delivery to the stream channel (see Figure 4-5).

Construction of wildlife habitat features, such as water developments occur under all alternatives and may temporarily disturb riparian areas and springs. Alterations of vegetation for wildlife habitat, such as mowing, burning, tree cutting, and planting may alter the proportion of watersheds with forest cover. These alterations would be within the prescriptions provided in the Vegetation section. These effects are displayed by alternative under "Vegetation Treatment Effects on Aquatic Resources."

### **Wilderness and Wilderness Characteristic Effects on Aquatic Resources**

Modeling of land uses shows that fish overwintering in areas managed as older dry forests have significantly higher survival rates than those overwintering in young, dry forest stands (Paulsen and Fisher 2001). Because commercial harvest would not be allowed in areas managed to protect wilderness characteristics, it is assumed that forests will be managed as older forests except for stand-replacing events. Alternative 1 has the fewest acres managed for WSA and wilderness characteristics. Alternatives 2, 3, and 5 identify acreage for the protection of wilderness characteristics. Alternative 4 has the most protection of WSA, Wilderness, and wilderness characteristics (see Table 2-23 for acreage values). Hence, the action alternatives, specifically Alternative 4 which has the most acreage for protection of wilderness characteristics, would have greater likelihood of providing quality overwintering fish habitat than Alternative 1.

### **Livestock Grazing Management Effects on Aquatic Resources**

The alternatives would not differ in their grazing management effects on aquatic resources because the standards for protection of aquatic resources are the same across all alternatives. Alternative 1 relies on PACFISH Enclosure B's programmatic guidelines for livestock grazing, which is similar to the aquatic management prescribed under Alternatives 2–5 (see Table 2-4 "Management of Riparian Areas by Function Rating"). Additional direction to manage grazing to protect fish habitat is also found in existing RMPs. Under Alternative 2, the grazing decision tree was designed to reduce potential conflicts associated with public interests and BLM multiple-use resource management objectives (Kauffman *et al.* 2004).

All the grazing alternatives include the requirement to attain "near natural recovery" of aquatic habitat. Even well managed grazing includes the risk that livestock may take a bite of a willow tree, spook a fish, step in a stream channel, create a hoof print along a stream bank, deliver fecal matter to a stream, and inflict similar actions. The risk of these activities occurring increases proportional to the BLM miles of stream in allotments open for grazing. Alternative 1 has the most acres of riparian management areas open to grazing. Alternative 2 reduces the area by 35% and Alternatives 3–5 reduce the acres of riparian management areas open to grazing by 50%. However, none of the alternatives cross thresholds for aquatic system health under existing policy, or state or federal law. Further, all of the alternatives would restore the aquatic systems and attain aquatic objectives across the entire landscape.



## Recreation Management Effects on Aquatic Resources

Outside the OHV designations, recreation management is not anticipated to significantly affect aquatic resources. Alternatives 2–5 propose up to three new recreation sites for a total increase of 34 acres within RMAs compared to Alternative 1. The use of BMPs is expected to minimize sediment delivery from the disturbances associated with high recreation use along stream channels and floodplains. However, the development of these recreation sites is assumed to help reduce pressure from dispersed, unmanaged recreation that could potentially increase sediment delivery to stream channels. Alternatives 2–5 may present opportunities to reduce soil disturbance on stream crossings from roads and reduce sediment delivery to stream channels, particularly in the North Fork John Day subbasin.

## Minerals Development Effects on Aquatic Resources

Protection of aquatic resources from minerals development would generally be greater in the action alternatives than in Alternative 1. Alternative 1 allows mining activity in RMAs as long as reclamation bonds and plans are prepared. Some mines with harmful effects to aquatic resources may proceed under Alternative 1 through to consultation for ESA compliance (NMFS 1995 a). Under Alternatives 2–5, all streams, except Dixie, Standard, and Canyon creeks would be identified as avoidance areas for mineral entry and are protected from any effects from new mineral uses (Table 2-14). Existing and new sites with mineral operations are required to meet ACS objectives through stipulations identified by an IDT. These sideboards eliminate impacts to aquatic resources under Alternatives 2–5. The limited recreational gold mining anticipated on Dixie, Standard, and Canyon creeks has sufficient side boards in place to avoid effects to aquatic resources. Additionally, there would be limitations of size, scope, and type of equipment to protect aquatic resources. In any case, the gold production potential of these sites is limited.

## Effects of Current and Reasonably Foreseeable Future Management

Future management on BLM, Forest Service, State, private, and other land within the plan area is assumed to be similar to current management. The Forest Service Schedule of Proposed Actions (SOPA) is indicative of the types of management actions that are likely to continue into the future throughout the plan area (see Cumulative Effects section for vegetation).

## Cumulative Effects

### *Vegetation, Fire and Fuel Management*

Planning area land managers generally share the objective of reducing ladder fuels to help reduce the potential for crown fires. This includes thinning and using prescribed fire to reduce potential for stand-replacing fires. Forest managers will conduct small tree thinning, underburning, hand piling and lopping of slash to reduce fuels, removal of hazard trees, and recovering the value of dead and dying timber damaged by wildfires. Thinning of overstocked stands of ponderosa pine and Douglas-fir is proposed to improve stand health and vigor. Many thinnings would be done from the understory, with the largest and most vigorous trees left after thinning.

Commercial thinning of dry site forest and woodlands would be conducted to reduce tree competition and improve stand health and vigor. These project areas are likely to include noncommercial thinning of young conifer stands to reduce tree density in the understory. Removal of post and pole size lodge pole through personal use post and pole removal are likely to occur on several hundred acres in the plan area.

The amount of forest health treatments on non-BLM lands is largely dependent on global fluctuations of social, economic and environmental demands. Forest health treatments would be required on private lands in order to completely attain desired conditions for pools. While state forestry practices are designed to provide large wood and aquatic habitat, research has shown that these rules will only attain about 50% of the potential large wood recruitment or about 25% of desired pool frequency conditions (Cordova 1995). Increases in the use of categorical exclusions for vegetation treatment may increase the acres of federal lands treated.

Land managers across the plan area will continue site-specific treatment of invasive plant species on thousands of invasive plant sites. Treatment methods include herbicides and manual, mechanical and cultural treatments. The National Programmatic EIS for Vegetation Management (USDI 1991a) addresses the cumulative effects of these sorts of activities.



Agencies with wildfire response responsibilities will continue fire suppression by aerial application of fire retardant to fight fires in the plan area. Water quality effects of fire retardant will be isolated and minimized by the requirement for compliance with the Clean Water, Endangered Species and Safe Drinking Water Acts, and wildfire retardant avoidance areas.

Vegetation management by other jurisdictions across the plan area is generally consistent with BLM resource management objectives and is restricted to assure compliance with the Clean Water act and Endangered Species Acts, requirements for fish habitat, and other aquatic protections. The cumulative effect of vegetative treatments on peak flows across the plan area is displayed in Figure 4-6. Vegetation treatments across all ownerships in all watersheds in Alternatives 2-5 would reduce the risk and magnitude of stand-replacing fires. Consequently, peak flow increases under Alternatives 2-5 are expected to be less than Alternative 1.

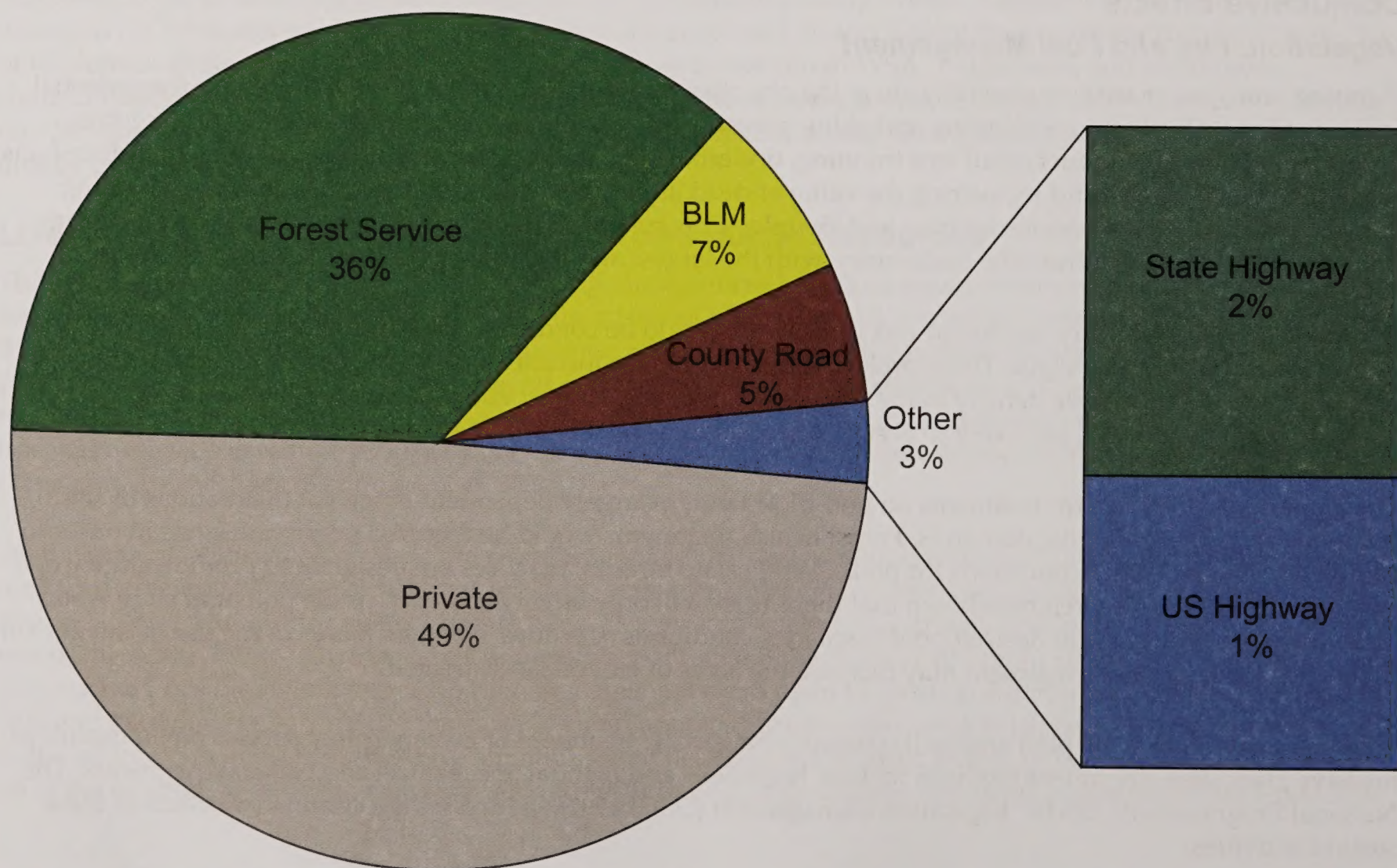
Early spring or fall prescribed burning of native open forest and grasslands by other public and private land managers in the plan area will increase vegetation growth and vigor, rejuvenate brush and increase brush sprouting, stimulate grass production, open some closed canopy, and reduce ladder and ground fuels, all with beneficial effects on aquatic resources.

### Travel Management

Roads in the plan area are managed by state, federal, and county agencies. The current average annual sediment delivery to streams across the entire plan area is estimated at 230 tons (see aquatic indicators section for discussion of methods). The BLM's transportation network of interim routes under Alternatives 2, 4, and 5 would reduce the sediment delivery to streams across the plan area by 4 percent, reducing BLM's proportional effect from 7 to 3 percent of the total sediment delivery from roads (Figure 4-6).

All Federal land managers will implement road management plans (including road construction and decommissioning). County and state road managers are likely to continue to work towards decreasing erosion from

**Figure 4-6. Percent of plan area sediment delivery to stream channels at road crossings by jurisdiction.**





roads and implementing BMPs to reduce the risk of sediment delivery to streams. The combination of the activities is expected to decrease total plan area sediment delivery to stream channels throughout the life of the plan.

### **Riparian Management**

Riparian management across land ownerships in the John Day Basin will continue to use off-channel water development to redirect grazing away from riparian areas. Restoration activities will continue to redistribute dredge tailings and restore floodplain connectivity along rivers and streams in headwater areas. Stream and meadow restoration projects will use rock and plant materials to build in-channel structures. Emphasis will shift to use of vegetative riprap in slack water areas. Land managers will continue to plant and fence woody riparian species. These actions complement BLM aquatic objectives under the action alternatives. Land managers will remove conifers from aspen stands and may exclude these areas from grazing. These actions are intended to release individual aspen trees and rejuvenate the stands.

### **Water Management**

Federal land managers will continue to issue rights-of-way and easements for the operations and maintenance of irrigation and domestic waters facilities crossing or originating on federal land. New science and conservation efforts may be incorporated into the terms and conditions for these water facilities.

Future projects will install tanks to collect rainfall and snow melt to improve or create upland bird habitat. Barbed wire fence will be installed to exclude livestock. Other projects will install perforated pipe collection and similar systems at spring sources, and divert water to livestock watering troughs. The Forest Service will continue to issue special use permits for spring boxes and waterlines associated with domestic water use on Forest Service land. These uses are small in magnitude and do not measurably affect instream flows or water availability, except where they improve floodplain function for capturing spring runoff and late season release.

Federal land managers will continue to permit native (mostly) hay cultivation and grazing on small strips of floodplains. These areas are usually associated with adjacent private agricultural land management. The cumulative effect of BLM water use is negligible in the face of the other water users in the basin.

### **Lands and Realty**

Landowners continue to seek opportunities to consolidate ownership of federal, state, and private lands. Assuming that national trends in the migratory patterns of retirees to the inland Northwest continue, private lands are likely to become subdivided into smaller parcels for retirement homes and recreation uses. Road-stream crossings and watershed cover changes are likely to increase with increased population and recreation uses.

The Forest Service will continue to issue special use permits for rights-of-way of primary power lines with 40-foot poles across the plan area. Other utility corridor permits may be for buried utility corridors. The number of communication corridors and sites, such as fiber optic cable and cell towers, is likely to increase with increasing demand.

### **Livestock Grazing**

The Forest Service will continue to authorize and permit livestock grazing on most of their allotments. Reauthorizations will likely continue according to current grazing management. Grazing management will be modified in authorizations if existing grazing management does not demonstrate maintenance of desired conditions or movement toward desired future condition described in Forest Land and Resource Management Plans. A few Forest Service allotments may be removed from permanent allotment status. Fencing is likely to continue within and around Forest Service allotments. Fish habitat and water quality concerns may lead to development of off channel livestock watering sites and water gaps. Because of requirements of federal land management planning criteria associated with aquatic resources, all of these activities will combine with BLM management to improve water quality and ecological condition of aquatic resources.

### **Mining**

The Forest Service will analyze existing and proposed mining plans of operations for active mining operations, such as those within the Lower Granite Creek Watershed. Land managers will continue to close abandoned



mines by filling in adits (see glossary), trenches, and shafts with earth and rock from existing mine spoil piles and recontouring slopes adjacent to work area. While these actions are likely to move the landscape toward attainment of water quality standards, the rate of recovery cannot be measured because it is dependent on funding.

## **Planning**

The Forest Service will use the same Aquatic Framework from ICBEMP to update their forest plans as the BLM used to develop the aquatic conservation strategy in Alternatives 2–5. This will afford an opportunity for addressing issues similar to those addressed in this BLM plan. Forest Service plans add flexibility and resource protection. Forest Service plans may establish special management areas or zones with specific resource or use emphasis. For example, current Forest Service plans established Research Natural Areas, such as the Shake Table plateau between Murderer's Creek and South Fork Murderer's Creek. Aquatic restoration planning and implementation by the Forest Service and other Designated Management Agencies (DMAs) are likely to result in at least minor improvements of all the indicators of aquatic condition and protect the source water and domestic water supplies. Designated Management Agencies are responsible for implementing actions to attain their portions of TMDLs. Ninety-eight percent of domestic water use in the plan area is on private lands, one percent is on BLM, and one percent is on Forest Service land, so the relative impact of BLM domestic water management is very small. However, the BLM has a larger proportion of plan area Source Water Protection Areas on BLM-administered lands (14%).

## **Recreation**

Forest Service campground boundaries will continue to be adjusted to relocate sites away from streams and lentic areas, accommodate increased recreation use and achieve other resource objectives. Recreational camp sites will likely increase and will include attributes such as handicap accessible tables, fire rings, concrete vault toilets, gravel parking spurs and access roads, bulletin boards, signs, shelters for winter and summer use, and possible placements of boulders around campground perimeters. Land managers may remove and replace toilets in or adjacent to existing footprints. Some projects will relocate parking areas, construct new sections of trail, and adjust interpretive signing. In addition, fences will be constructed to minimize conflict between recreation and other uses. Increased recreation may affect attainment of some aquatic objectives relating to sediment and riparian vegetation. However, management agencies have a suite of BMPs available to mitigate or remove these effects on a case-by-case basis.

## **General**

Overall, all alternatives maintain traditional land uses in the area. The alternatives are not likely to increase urbanization or other land uses that dramatically impact aquatic resource by increasing peak flows, amount of household toxins, stream crossings, fill of floodplains for development, and other effects.

The cumulative effects of current and reasonably foreseeable actions are not likely to exceed thresholds for acceptable water quality standards, fish habitat conditions, beneficial water uses or aquatic species habitat conditions as measured by the aquatic objectives. In general, requirements of the federal land management planning criteria associated with aquatic resources (Appendix A) will guide a third of the plan area managed by federal agencies toward improved water quality and condition of aquatic resources. This will complement the effects of BLM actions in the plan area.

Water quality limited streams are those listed under the Clean Water Act Section 303(d) or those not meeting the Total Maximum Daily Load (TMDL) allocations. After preparation of TMDLs, all Designated Management Agencies will submit plans for how their portions of the water quality limited streams will attain the TMDLs.

Alternative 1 did not directly address water quality limited streams on BLM lands. Alternatives 2–5 address water quality limited streams and provide management direction for creating and implementing water quality restoration plans. Under Alternatives 2–5, the cumulative effects of BLM's management of water quality limited streams are proportional to the miles owned. The BLM is the DMA for approximately 10% of the plan area miles of water quality limited streams. Most of these listings are due to water temperature and sediment. Other water quality parameters of pH, dissolved oxygen, *E. coli*, or fecal coliform are aligned with streams also listed for water temperature. Under Alternatives 2–5, these parameters would be addressed with BMPs and management actions similar to those used for water temperature. The other 90% of water quality limited streams owned by private



landowners, the state, or the Forest Service will be addressed by other DMAs. These DMAs (including the Forest Service, Oregon Department of Agriculture, and Oregon Department of Forestry) are responsible for enacting BMPs and restoration work on these streams in order to meet water quality standards and TMDLs. Therefore, BLM's efforts will add to the cumulative efforts required to restore water quality to state standards or attain TMDLs over the life of the plan.

## Wildlife

Priority Species and Communities were used in this analysis and identified through the Conservation Action Planning process developed as part of the BLM Conservation Learning Network. The BLM Conservation Learning Network is a pilot project sponsored by the BLM Washington Office to assist BLM RMP teams in achieving BLM Land Use Planning goals and objectives (BLM H-1601-1) for priority habitats and species. The JDB RMP Team was one of four teams from the BLM that participated in this pilot.

The BLM Conservation Learning Network was developed under a National Fish and Wildlife Foundation grant sponsored by the BLM Washington Office. Planning tools and processes were developed via cooperative effort among the BLM, The Nature Conservancy, the Idaho Department of Fish and Game, and the Colorado Natural Heritage Program. The project evolved from a 5-year Assistance Agreement between the BLM and The Nature Conservancy to develop planning tools for RMP use.

Priority Species or Communities were identified to address the habitat needs of all species on the Interagency Special Status/Sensitive Species Program list (ISSSSP - July 2007; Appendix H), Partners in Flight focal species, and locally important species known or suspected to occur within the plan area (Appendix O). The Priority Species and Community concept is a stepped down assessment method of the source habitat concept utilized in the Interior Columbia Basin Ecosystem Management Project (ICBEMP), which was a large scale assessment that encompassed the entire Interior Columbia Basin, including the plan area.

The assessment of Priority Communities enables us to display effects to groups of species rather than individual species. Priority Communities are based on groupings of biophysical settings (BpSs) and include forestland; rangeland; shrubland; juniper steppe; grassland; riparian; and cliffs, canyons, and caves. Appendix F displays the BPS composition of each of the Priority Communities, except for cliffs, canyons, and caves. For a more detailed description of BpSs, see Appendix E. Appendix O summarizes habitat associations for priority species. Corresponding amounts of habitat within ARV by biophysical environment are displayed in Appendix E. Appendix Q provides a summary of species status associated with riparian habitats within the planning area.

Analysis of the environmental consequences of the alternatives on wildlife considered the following key resources or resource uses: vegetation, fire and fuels, aquatic resources, wildlife, caves, livestock grazing, recreation, access and transportation, scenic byways, energy and minerals, lands and realty, and agricultural lands.

Proposed management of the following resources/programs have no new actions proposed or would have no anticipated impacts at this scale to wildlife: Soils, Air Quality, Vegetation (special status plants and noxious weed control), Wild Horses, Native American Uses, Paleontological Resources, Cultural Resources, and Hazardous Materials.

## Wildlife Indicators

The following indicators were used to compare and assess effects:

- **Quantity, quality, and spatial distribution** of wildlife habitat are indicators of effects to species (see Appendix O). The primary indicator of quantity for general habitat types is the Acceptable Range of Variation (ARV) for vegetation. BpS descriptions include structure, canopy cover, and patch size information. Each of these features as well as the juxtaposition of foraging, reproductive, and security habitat determine the quality of habitat. Some wildlife habitat quality is also dependent on special features like snags and large down wood.



- **Forage availability, composition, quantity, and quality** indicate how habitat affects the vigor of individual wildlife species.
- **Composition, quantity, and quality of vegetation** surrounding caves are an indicator of the quality of wildlife habitat provided by a cave.
- **Off-road use by motorized vehicles** is an indicator of disturbance to wildlife life cycles, wildlife migration, and decreases in habitat quality. Higher open road densities increase the potential for disturbance of foraging and reproductive activities, habitat destruction, and human induced mortality. Limiting OHV use to designated roads allows wildlife to adjust to human activities, limits the scope of impacts, and decreases the potential for habitat destruction.
- **Timing of disturbance** is an indicator of the effects to wildlife life-cycle requirements and vigor. Disturbance during critical seasons, such as the mating season, may reduce breeding or otherwise alter wildlife vigor.
- **Prescribed and interim road density** is an indicator of habitat quality, quantity, and spatial distribution. As road density increases, habitat quality, quantity and spatial distribution decrease.
- **Habitat security areas** are areas where the level of human disturbance is limited and wildlife sensitive to human disturbance can carry out all or part of their life-cycle requirements.
- **Acres of developed recreation** are an indicator of loss to wildlife habitat quality and quantity. It is also an indicator of how wildlife is spatially distributed across the landscape.
- **Acres with potential for land exchange or sale** indicates potential to alter vegetation and thus wildlife habitat patterns with the correlating change in management emphasis. Land acquisitions or disposals can affect the amount, quality and effectiveness (connectivity) of wildlife habitat and the ability to manage for wildlife resources. Land exchanges that block-up habitat allow for management of larger patch sizes, increase the ability to utilize prescribed fire, and reduce operating costs.
- **Distance bands from an open road** indicate the levels of both security habitat and the amount of fragmentation.
- **Acres available for wildlife food and cover** indicate the amount of food and cover available for upland game species, specifically birds. Irrigated lands in food and cover crops increase the amount and diversity of wildlife utilizing these and surrounding acres.

## Wildlife Assumptions

- Special Management Area designations may include restrictions that would result in less vegetation manipulation designed to benefit wildlife habitat. Maintaining wilderness characteristics, WSRs, ACECs, RNAs, and desired VRM classes may affect wildlife habitat by restricting the methods or tools available to achieve wildlife goals.
- Wildlife habitat needs vary significantly by wildlife species. For a majority of wildlife species, it is generally true that healthy and sustainable wildlife populations can be supported where there is a diverse mix of plant communities to supply structure, forage, cover, and other specific habitat and welfare requirements. Exceptions to this may apply to species requiring large blocks of relatively homogeneous vegetation at least in some seasons (Bailey 1984). Organisms typically evolve adaptations to the usual range of environmental variation (Futuyma 1979). The complement of native wildlife species in the plan area adapted over time to be successful at reproducing within the historical vegetation mosaics. Managing to promote a diverse mix of plant communities is thus an important component of managing for a complement of species, as opposed to a single species concept of management.
- To provide a realistic magnitude and context of effects on wildlife in the plan area, this analysis uses priority vegetation treatment areas to indicate effects of treatments effects in other areas that are assumed to be similar to those detailed for priority areas.
- Designating Back Country Byways reduces wildlife security due to increased disturbance from vehicle traffic.
- Open OHV areas will increase in use due to closures in other areas.
- On lands grazed by livestock and/or wild horses, big game would compete for available forage. In addition, livestock use can alter wildlife habitat structure.



- Direct disturbance to a species and possibly its habitat can affect species' use of an area.
- The ability to limit travel to interim roads is uncertain given the scattered and isolated nature of BLM lands.
- The ratio of commercial agriculture to wildlife food and cover crops will average approximately 50/50 on BLM agricultural land.
- Many basic wildlife population management issues do not differ between alternatives, including the following. The following issues will be addressed during plan implementation by following wildlife guidance provided in Chapter 2 and BLM policy.
  - Habitat requirements for any particular species cannot be met everywhere; species-specific needs are often very site specific.
  - Habitat may be only seasonally available due to elevation, aspect, type of vegetation present and proximity of human disturbance.
  - Habitat conditions will vary due to natural processes and wildlife uses of habitats can change, even if human-caused influences are reduced or eliminated.
  - The interaction of an animal population with its habitat is dynamic, and numbers of animals and their geographic distribution may vary significantly over time. However, there is a critical minimum threshold at which degraded habitat conditions or reduced population size and viability limits the long-term sustainability of the population. There is a similar upper limit that limits further population growth or expansion.
  - Thresholds on wildlife population growth and distribution may be biological, natural or human-caused, and are most important with small, sedentary populations and species with very rigid breeding habitat requirements, including cave bats, and amphibians.
  - Learned and traditional behavior may limit a species' ability to colonize or re-colonize habitat, and adaptability varies by species.
  - Management actions intending to benefit a specific habitat or a priority species will influence other species occurring in that same habitat. Therefore, impacts to wildlife populations and habitat are not discrete since actions may benefit one species while having an adverse, or a beneficial impact on another.

## Analysis of the Effects of the Alternatives on Wildlife

### Vegetation Management Effects on Wildlife

The following analyses of effects are organized by the following Priority Communities: grassland; shrubland; juniper steppe; forest; riparian; and cliffs, canyons, and caves. Priority species by habitat are shown in Appendices O and Q.

#### Grassland Habitats

The Palouse Prairie (bunchgrass prairie) historically has been converted to farmland, and introduced nonnative annual grasses have altered fire return intervals. Within the plan area, grassland habitats are currently deficient in mid- to late seral stages and there is a surplus of uncharacteristic vegetation (see Appendix F). Areas of uncharacteristic vegetation include agriculture fields, and the nonnative annual grasses cheat grass and medusahead. Invasive annual grasses reduce native wildlife habitat suitability by altering forage and cover. Invasive annual grasses also perpetuate homogenous landscapes by enabling fire above historic frequencies. Disturbances such as cultivation and more frequent fire have resulted in short plant structure and a lack of cover for the Washington ground squirrel and ground-nesting birds such as the grasshopper sparrow. Some of the grassland priority species (Appendix O) are associated with late seral grasslands, where there is a minor shrub component. These shrubs provide browse for mule deer and antelope and would be important on winter ranges.

Under Alternative 1, grasslands on BLM lands would be managed for mid- to late seral conditions. However, the existing management scheme has not yet served to rectify the deficit of mid- to late seral grasslands and the extent of uncharacteristic vegetation. In practice, the primary emphasis of vegetation management would likely continue to be towards early to mid-seral conditions. Wildlife habitats are expected to continue the trend of decreasing quality under current management (Alternative 1).

Under Alternatives 2-5, less than 15% of the grasslands are within priority vegetation treatment areas (Map 4). Treatments would focus on increasing the quantity and quality of wildlife habitat for priority species. Under



these alternatives, a portion of grassland habitats would be further prioritized for treatments where they occur on big game winter ranges. The action alternatives also include a seasonal timing restriction on disturbances and/or provide for buffer distances for species such as sage-grouse, prairie falcons, antelope, and bighorn sheep, and would serve to reduce disturbance of these populations (Table 2-5). Consequently, vegetation management in general under the action alternatives would increase habitat quality for grassland wildlife species.

Under Alternatives 2–5, grassland habitats would be managed to achieve an acceptable range of variation (ARV) in vegetation structure and composition based on the biophysical setting (see Appendix F) and move uncharacteristic vegetation back into native species, where possible. The result would be to eventually increase the quantity and quality of grassland habitats in priority vegetation treatment areas.

### ***Short- and Long-term Effects of Vegetation Treatment Types on Grasslands***

Fire treatments in grassland communities cause a short-term loss of nesting cover and loss of seed crop and in some cases reduction of insect populations for foraging. The majority of these effects last less than five years. In areas with healthy native herbaceous cover, total grass cover and vigor is also improved for several years resulting in higher value hiding, nesting, and foraging habitat.

Grassland communities are fire adapted systems; however, fire can cause an increase in the dominance and spatial distribution of annual grass composition. Alternative 1 would continue suppression of all wildfires, and current prescribed fire treatment levels in rangelands (including grasslands) of approximately 2,000 acres per year (Table 4-5). Alternatives 2–5 would treat 2,000 rangeland acres per year with prescribed fire, and would additionally allow for 1,500 acres of fire management with fire to achieve resource objectives. The action alternatives preclude fire to achieve resource objectives in areas of high annual grass composition. Over time, the health and vigor of grassland communities would be less under Alternative 1 than Alternatives 2–5.

In the short term, seeding would improve habitat quality and quantity by restoring native habitats used by priority grassland species. Restoration of native grass habitats would increase the year-round habitat and forage for all the priority species. Restoration seeding designed in a mosaic pattern would increase overall quality and quantity of big game habitat. An increase in the health and vigor of the shrub and herbaceous layer improves palatability for big game species. Alternatives 2–5, which have more specific prescriptions for mosaics of native grass and shrub restoration, would increase habitat quality, quantity, and spatial distribution more than the less prescriptive Alternative 1.

Over the long term, moving the landscape toward a more viable and sustainable vegetative structure and composition would meet the habitat needs of priority grassland wildlife species. Habitat conditions provided under the action alternatives would provide a mosaic of habitat features such as large expanses of perennial native grasses interspersed with low density patches of shrubs. Existing stands of perennial bunchgrasses are expected to be retained and uncharacteristic classes and overabundance of early seral classes would be replaced. Management under Alternatives 2–5 would be focused on achieving ARV, which should have a greater positive effect on populations as a whole than alternative 1. Long term detrimental effects of Alternatives 2–5 to big game are not expected due to the anticipated size and design of treatment areas. Viable big game habitat is expected to occur across the landscape and retained over time under the action alternatives.

### ***Shrubland Habitats***

The combination of fire control and excessive grazing allow juniper expansion and reduce the quantity and vigor of understory species. These sites are often invaded by nonnative annual grasses or noxious weeds. Within the plan area, most of the shrubland habitats currently include a surplus of early seral stages and a deficit of mid- and late seral stages, and most include significant amounts of uncharacteristic vegetation, both on and off BLM lands (see Appendix F). These changes in habitat structure and composition have had a variety of effects; for example the quality of sage-grouse brood-rearing habitat declines due to reduced understory species diversity. In the Prineville District as a whole, juniper expansion and displacement of historic sagebrush has occurred dramatically. Current sage-grouse range and habitat within the District is limited primarily by juniper encroachment (Hagen 2011).

Under Alternative 1, there exists no direction for rangeland vegetation. Past vegetation management practices have resulted in excess early and late seral and uncharacteristic conditions. The lack of natural fire has resulted



in expanding juniper populations and densities. Shrublands with juniper occupation provide increased wildlife species richness until the juniper dominance impacts the shrub and herbaceous component. Without treatment these stands lose their diversity of wildlife and become resistant to fire due to the reduction of understory plants. Continuing this trend under Alternative 1 may adversely impact ground-nesting birds and shrub-dependent species. The loss of understory also reduces forage value for small mammals and large herbivores.

Under Alternatives 2–5, approximately 16% of BLM shrublands are within priority vegetation treatment areas (Map 4). These habitats are dominated by encroaching juniper or other uncharacteristic vegetation, and treatments would focus on reducing juniper and increasing native bunchgrass. Under these alternatives, a portion of shrubland habitats would be treated to enhance big game winter habitat quality and provide sage-grouse habitat, consistent with action statements related to juniper encroachment described in the Greater Sage-grouse Conservation Assessment and Strategy for Oregon (Hagen 2011). The action alternatives also include a seasonal timing restriction on disturbances and/or buffer distances for sage-grouse, ferruginous hawks, antelope, and bighorn sheep, which would serve to help minimize disturbance to these populations (Table 2-5). Consequently, vegetation management in general under the action alternatives would increase habitat quality and quantity for shrubland wildlife species more than continuing the vague existing management under Alternative 1.

### *Short- and Long-term Effects of Vegetation Treatment Types on Shrubland Habitats*

In all alternatives, anticipated short-term effects of fire treatments on shrubland priority species would generally reduce shrub cover since many of these species require shrubs for nesting, hiding cover and food. Generally, big game species would benefit from the increased forage and quality winter habitat that would result from fire treatments. If too much sagebrush is removed from a broad area, winter habitat quality could decrease. Since the action alternatives (Alternatives 2–5) call for relatively greater amounts of rangeland fire treatments through fire to achieve resource objectives than Alternative 1 (Table 4-5), they may also have more short-term displacement of, and habitat loss for, individuals of select priority shrubland wildlife species.

Short-term effects from mechanical treatment of juniper is expected to benefit bird species and pygmy rabbits by opening areas up for foraging and nesting habitat, while reducing perches for aerial predators. Mechanically treating shrub BpSs where juniper canopy cover exceeds 40% would improve the quality of the shrub and grass habitat components and increase the availability of nesting and foraging habitats for land bird species. An exception to this may be where the lark sparrow may require some use of taller tree canopies. The mechanical development of mosaics in growth forms increases lark sparrow habitat quality by providing edge effects within lark sparrow habitat. Reductions in habitat in Alternative 1 would not consider the amounts or types of treatments necessary to retain sufficient habitat for lark sparrow and other species that utilize juniper. The action alternatives would retain juniper in densities and locations in balance with other seral conditions in shrublands.

Mechanical treatments are expected to increase forage and decrease hiding cover in the short term. Alternative 1 provides no direction for the pattern of mechanical treatments. Under Alternatives 2–5, mechanical treatments would be designed in a mosaic pattern to improve overall quality and quantity of big game habitat. A positive response in the health and vigor of the shrub and herbaceous layer is expected and would improve palatability for big game species. Detrimental effects to these species could become evident if treatments were conducted over too large of an area under any alternatives.

All alternatives propose restoration seeding. Alternatives 2-5 provide additional direction about the pattern of seeding and priorities for restoration treatments, whereas Alternative 1 does not. The criteria associated with restoration treatments in the action alternatives is expected to benefit big game winter ranges, sagebrush habitat patch size, and riparian habitats. Restoration efforts along drainages where well-drained deep soils occur would increase the quantity of habitat for pygmy rabbits.

Over the long term, moving the landscape toward a more viable and sustainable range of vegetative structures and composition would meet the needs of priority shrubland wildlife species. Habitat conditions that provide a mosaic of habitat features, such as open patchy shrubs, large patches of sagebrush, dense canopy cover of sagebrush, and tall shrubs, would increase wildlife habitat quality and quantity.

Prescribed fire and wildfire reduce the amount of shrub habitat in the short term. If the fire return frequency or size of burns is too large the amount of shrub habitat available for 20–100+ years can be insufficient to support



species that require >10% shrub cover. The action alternatives would result in more fire in shrublands due to fire to achieve resource objectives. Management direction contained in the action alternatives regarding the conditions and locations where fire to achieve resource objectives would be allowed based on annual grass and noxious weed composition should limit the amount and extent of detrimental fire effects. Fire size, frequency, and intensity within ranges appropriate for the BpSs would maintain stands in early to mid-seral condition where herbaceous growth is vigorous and provides cover and forage. Shrub stands without a healthy herbaceous component provide a far lower quality of foraging and reproductive habitat.

Through time and without further disturbance, areas currently in an early seral condition are expected to transition to mid-seral without further disturbance. The action alternatives identify areas where mid-seral shrub conditions are limited and direct treatment is toward mechanical rather than fire treatment type. Alternative 1 does not contain this direction.

Alternative 1 would manage portions of the planning area with a cover: forage ratio; however, this ratio is not specific to the vegetative potential of the site. Meeting this ratio in shrubland BpSs can result in a loss of large blocks of shrub dominated habitat necessary for species like sage-grouse, antelope, and sage-sparrow. The action alternatives would allow for larger treatments sizes in shrublands when required by existing conditions because patch size requirements are tied to the BpS descriptions. This can reduce the amount of hiding cover for some big game species and nesting habitat for species like horned lark, but would increase habitat for ground level nesting species and species that require large blocks of unfragmented sagebrush habitat. The overall amount of edge habitat may be less under Alternatives 2–5 than Alternative 1 due to patch size requirements. However, management under Alternatives 2–5 would still be focused on achieving ARV, which would direct patch size and seral structural conditions toward those specific to BpS site potential and thus provide habitat for species that require larger contiguous blocks as well as those that utilize edge. Managing to meet seral structural stages across diverse BpSs on the landscape would ensure variability of cover and forage conditions but not to the exclusion of one or the other.

### **Western Juniper Steppe Habitats**

Western juniper steppe BpS habitats are typically associated with rocky rims or other harsh sites where a physical barrier precluded natural fire from burning on a frequent basis. Larger percentages of these sites were in late seral conditions or old growth (see glossary) in the past. Old growth trees and stands provide hollow trees for primary and secondary cavity nesters, crevasses for small mammal dens, berries that provide a food source, perch sites for raptors, and many other unique wildlife habitats.

Many of these sites have seen an increase of post-settlement juniper in the understories. This increase in juniper cover alters understory conditions. The increase in understory juniper puts the stands at greater risk of burning until understory trees become of a size where they no longer provide ladder fuels to the larger structure trees. Over time these stands again become resistant to fire due to the increased competition stress. Increased competition stress and higher potential for fire put these stands at a greater risk of stand replacement. Old growth conditions in juniper would take hundreds of years to return.

All alternatives would direct management to retain late seral conditions on the majority of these habitat types.

The action alternatives provide more specific direction in that they identify BpS locations where this management should occur as opposed to Alternative 1, which is not location specific. Alternative 1 does not provide direction for prioritizing treatments to achieve ARV of juniper steppe habitats. Under Alternatives 2–5, juniper steppe has 33% of its area within priority vegetation treatment areas (Map 4). Because the action alternatives are more site specific relative to old growth retention locations, these conditions would be more sustainable through time. The action alternatives also provide specific direction for the retention of old growth trees and stands whereas Alternative 1 does not.

Due to the prioritization of treatments in Alternatives 2–5, it is expected that old growth conditions in juniper steppe would be better protected in the action alternatives than Alternative 1.



## **Forested Habitat**

As a result of current and past management, dry forests (ponderosa pine, mixed conifer, and drier Douglas-fir) generally have denser understories, fewer large trees and more shade-tolerant species than what occurred historically. Currently, moist forests (mixed conifer, moister Douglas-fir, white/grand fir, and lodge pole pine) are denser with higher levels of ground fuels than what occurred historically.

Two forested areas currently contain the oldest and largest trees in the plan area. One is located in Timber Basin (less than 500 acres) at the south base of Rudio Mountain and the other is isolated near the north face of Aldrich Mountain (Big Canyon Creek, approximately 1,100 acres). Both areas are similar and have old multi-story forest characteristics. They have some trees (ponderosa pine and Douglas-fir) in excess of 40 inches dbh in the overstory and an understory of mixed conifers (both shade tolerant and intolerant species). Western larch communities are declining.

Under Alternative 1, forest management is focused on sustainable commercial harvest, minimizing losses from insects and disease, thinning; and maintaining site productivity. Alternative 1 allocates 135,719 acres as Timber Management Units (TMU) where the primary focus of management is on timber production. This focus would result in less large structure habitat for species like white-headed and pileated woodpeckers and reduced cover values for big game. Continuing current management direction would also result in further increases of live and dead fuels. This fuel buildup would eventually result in fires that reduce habitat quality and quantity for species dependent on large structure like the white-headed woodpecker.

Under Alternatives 2–5, approximately 40% of the forested habitat is identified as priority vegetation treatment areas (see Map 4). Alternatives 2–5 propose greater amounts of mechanical and prescribed forested treatments than Alternative 1. Under the action alternatives, habitats dominated by encroaching younger tree species with accumulations of dead fuel or abundant uncharacteristic vegetation would be targeted for treatment, thus increasing the quantity and quality of wildlife habitat for priority species. Under these alternatives, a portion of forested habitats would be further prioritized for treatments where they occur on big game winter ranges.

The action alternatives also include a seasonal timing restriction and/or buffer distances for flammulated owl, Townsend's big-eared bat, mule deer, and elk, which would serve to help protect these populations (see Table 2-5). Generally, vegetation management under the action alternatives would increase the habitat quality and quantity for most forest wildlife species.

### ***Short- and Long-term Effects of Vegetation Treatment Types on Forested Habitat***

All of the alternatives propose a similar amount of prescribed burning in forested habitats. However, Alternative 1 calls for suppression of all wildfires. Alternatives 2–5 allow for the use of fire to achieve resource objectives, which could result in more of the plan area burning.

Prescribed fire generally reduces undesirable tree species and or age classes and allows for better forest health. If fires are suppressed and prescribed burning or mechanical treatments are not used to restore and maintain forest health, a stand replacement event could eventually occur through insect or disease mortality and/or wildfire. Loss of large structure trees decreases habitat quality and requires many years for renewal of the habitat. Big game species would benefit from fire treatments, unless too much tree cover is removed. Prescribed and managed fires create mosaics of forage and cover for forest habitat wildlife species. Big game prefers foraging in burned areas compared to unburned areas, although preference may vary seasonally. This preference may indicate an increase in plant nutrients, which usually occurs following fire.

Mechanical treatments would target shade tolerant understory trees much more specifically than prescribed fire. The use of mechanical treatments in forested habitats prior to prescribed fire would result in changes in seral structural conditions consistent with the currently identified ARV treatment needs. Mechanically treating dense forests where canopy cover exceeds 40% would improve the quality of the understory vegetation, which increases the availability of ground and shrub nesting and foraging habitats, but would reduce cover values.

Over the long term, moving the landscape towards a more viable and sustainable range in vegetative structure and composition would meet the needs of priority forest wildlife species. Alternatives 2–5 are expected to move the landscape more quickly toward viable stable ranges in vegetation than Alternative 1.



Snags and large down wood provide nesting/denning and foraging habitat for a host of priority wildlife species. Alternative 1 lacks specific direction on retention of large structure, snags and downed logs. The action alternatives provide direction for the retention of snags, large down wood, and old growth character trees. Snag and large down wood retention levels prescribed in the action alternatives are tied to the site productivities and densities expected under natural disturbances. Through time these within stand characteristics would add to the character of stands and enhance their ability to meet large structure (old growth) objectives sooner and more completely than Alternative 1.

### ***Cliff, Canyon, and Cave Habitat***

Appendix O lists Priority Species associated with cliff, canyon, and cave habitats. Alternative 1 provides no specific guidance for management actions in cliff, canyon, or cave habitats. The action alternatives also include a seasonal timing restriction and buffer distance for prairie falcon nests, bighorn sheep, and spotted and cave-dwelling bats (Townsend's big-eared, Pallid, fringed myotis), which would help protect these populations (Table 2-5).

### ***Short- and Long-term Effects of Vegetation Treatment Types on Cliff, Canyon, and Cave Habitat***

Vegetative treatments directly adjacent to cliffs and caves can alter the micro habitat of these sites, reducing their potential to be used as roosts, nests, or perches. Removing vegetation can also expose sites to predation or human intrusion. Alternative 1 contains no specific direction for the protection of vegetation immediately adjacent to these features, whereas the action alternatives do.

Vegetative treatments (both mechanical and prescribed fire) near, but not directly adjacent to cliffs and caves can benefit foraging habitat in these areas. Riparian and meadow habitats near cliffs provide foraging habitat for species like prairie falcon and golden eagle. Riparian and open forested habitats near cliffs or caves provide foraging opportunities for species like spotted bats and Townsend's big-eared bats. Through time, increased ability to treat riparian habitats, emphasis on forested treatments, and greater amount of treatment expected under the action alternatives would result in more productive foraging conditions associated with cliffs and caves than under Alternative 1. The greater amount of fire treatments associated with the action alternatives would have more short-term effects to individuals and localized populations; however, the majority of cliff, canyon, and cave species are highly mobile and can travel many miles to forage.

For bighorn sheep, fire generally improves and increases forage and increases visibility for escape. Fire treatments conducted on poor condition habitat may eliminate bighorn sheep habitat. When non-sprouting plant forage is eliminated within the treatment area or when too much area is burned, forage would be inadequate until the next growing season.

Restoration of native vegetation through seeding would improve the quality and quantity of the habitats used by cliff, canyon and cave species. Alternative 1 provides no direction for the pattern or prioritization of restoration seeding. Under Alternatives 2-5, restoration seeding would be designed in a mosaic pattern, which would increase the edge effect and would be a positive benefit to wildlife.

The specific direction in the action alternatives to manage vegetation to retain micro climates associated with cliffs and caves combined with the increased ability and amount of treatment to surrounding foraging habitats would provide better habitat quantity and quality than Alternative 1.

### ***Summary of Vegetation Management Effects on Wildlife***

The quantity and quality of wildlife habitat that would be produced under the action alternatives would come closer to meeting ARV objectives based on treatment types and amounts than Alternative 1. The targeted treatment types and prioritization of treatment locations based on resource values, including key wildlife habitats, in the action alternatives would balance current habitat shortages, provide a more appropriate balance of cover/forage and patch size conditions, and retain within stand characteristics such as snags, down wood, and old growth trees more directly than Alternative 1. Consequently, the action alternatives are more likely through time to provide a balance of wildlife habitats across the planning area.



## Fire and Fuels Management Effects on Wildlife

Under Alternative 1, there would be 22,304 acres designated as WUI, which would continue to be managed to reduce hazardous fuels that pose a risk to communities at risk. Alternative 1 does not provide any more specific direction about fuels treatments around communities. Alternatives 2–5 provide direction to design fuels and vegetation treatments to consider not only public and firefighter safety, but also wildlife habitat and corridors in addition to other resource issues. Alternatives 2–5 also aim to achieve objectives for hazard reduction in WUI and also ARV across larger areas. The only exception would be the approximately 5,000 acres of BLM land where intense vegetation treatments would emphasize fire safety over wildlife values. The WUI objective of reducing fire hazard under Alternative 1 could result in more intense fuels treatments across the plan area than the Alternatives 2–5. Management under Alternative 1 would lead to more vegetative and habitat conditions outside the requirements for many priority species. The action alternatives would not.

The action alternatives designate 85,391 acres of WUI; 22,304 acres of Full Suppression; and 434,306 acres of fire to achieve resource objectives. Under the action alternatives, more acres of vegetation would be treated for community safety and to meet ARV objectives. In addition, outside of Full Suppression areas, the action alternatives require treatment projects to be designed to assure balances between attaining ARV and FRCC objectives. This would improve the habitat quality and quantity for priority wildlife species more under Alternatives 2–5 than Alternative 1.

Alternative 1 lacks designated areas for fire to achieve resource objectives, which would limit the ability to utilize natural fire starts to improve or maintain landscape health. Fuel treatments in the Full Suppression areas would continue to be for the primary purpose of reducing fire risk, and wildlife objectives would not be considered for those areas. Utilization of fire to achieve resource objectives under the action alternatives would reduce treatment needs to meet ARV objectives. This could achieve better habitat conditions quicker than Alternative 1, with greater benefits to priority species.

## Aquatic Resource Management Effects on Wildlife

Existing aquatic resource management direction under Alternative 1 provides guidance at the scale of the entire Interior Columbia Basin; Alternatives 2–5 generally provide more locally specific management objectives. This area-specific management would result in attainment of a greater amount of wildlife objectives, including providing habitat to meet ODFW management objectives for deer, elk, and pronghorn antelope. Alternative 1 designates 51,260 acres to be managed for riparian objectives; Alternatives 2–5 identify 139,673 acres to be managed for riparian objectives. In Alternatives 2–5, there would be almost three times the area managed for riparian values; this would increase habitat quality and quantity for priority wildlife species (including the bald eagle and tricolored blackbird) by providing more quality habitat for activities such as nesting, foraging, and roosting.

Alternative 1 lacks any measures for attaining specified goals while Alternatives 2–5 identify measures of attainment to track progress in achieving management objectives through the life of the plan. This specificity would help to maintain and improve riparian habitats, which is consistent with supporting healthy, productive, and diverse wildlife populations. Under Alternatives 2–5, approximately 35% of riparian areas are identified within plan area priority vegetation treatment areas.

Alternative 1 also does not propose any restoration, nor identify actions needed to attain restoration of riparian habitat. Alternatives 2–5 identify active restoration actions for riparian habitat with methods that include fire, mechanical treatment, seeding, and targeted herbicide use. An increase in the health and vigor of the shrub and herbaceous layers are expected from attainment of aquatic restoration objectives and actions included in the action alternatives. This enhanced vegetative condition would improve palatability for big game species. The effects of fire, mechanical, seeding, and herbicide treatments on priority species are described in more detail below.

## Fire Treatment Effects on Wildlife

Prescribed fire is a tool proposed for use in realigning vegetation structures and classes to meet ARV objectives. All alternatives are similar in the expected amount of prescribed burning per year (Table 4-5); however, Alternative 1 calls for suppression of all wildfires, whereas the action alternatives allow for the use of fire to achieve resource objectives. The use of fire to achieve resource objectives in Alternatives 2–5 would increase riparian wildlife habitat quality and quantity relative to Alternative 1.



## Mechanical Treatment Effects on Wildlife

Mechanical treatments are also proposed as a means to alter vegetation structures and classes to meet ARV objectives. Mechanical treatments in riparian areas generally control encroaching undesirable woody species. The resulting increase in diversity and productivity of riparian and aquatic plant communities would increase the associated wildlife habitat quality and quantity. Alternatives 2–5 propose greater amounts of mechanical treatments in forestlands (Table 4-5) and in riparian areas for restoration purposes under the Aquatic Conservation Strategy (ACS), which would bring about greater increases in habitat quality and quantity of riparian associated species than Alternative 1.

## Seeding Effects on Wildlife

Seeding would increase habitat quality and quantity by restoring native habitats used by priority species. All alternatives include direction on the use of native seed. The action alternatives provide greater direction on the patterns of seeding and more specific BMPs for designing seeding actions to benefit wildlife than Alternative 1.

Restoration of native tree, shrub, and herbaceous vegetation would increase the year-round habitat, forage, and cover for riparian wildlife species, potentially to a greater degree in the action alternatives than Alternative 1.

## Herbicide Use Effects on Wildlife

Herbicide use for noxious weed control would be used as a step in re-establishing native riparian vegetation for associated wildlife species. The alternatives do not differ in terms of direction on herbicide use, but the action alternatives, through the ACS, provide for the use of herbicides to achieve aquatic objectives for native plant diversity and stream function.

Eliminating and/or reducing weedy species would help maintain or increase existing priority wildlife species habitat quantity and quality, possibly to a greater degree under the action alternatives than Alternative 1.

## Livestock Grazing Management Effects on Wildlife

Grazing allotments under all alternatives are classified into two livestock grazing authorization categories (also see Livestock Grazing, Chapter 2, and Appendix J):

- Open, with potential for Reserve forage.
- Potentially close upon relinquishment by the lessee and if existing ecological and/or social conflicts with livestock grazing are not mitigated.

In Alternative 1, almost all grazing allotments would be Open over the life of the plan (see Table 4-13). The action alternatives would in general have a greater amount of area ungrazed on a consistent basis. There is potential for grazing livestock to compete with big game for forage resources. The risk of forage competition between livestock and big game would be the greatest under Alternative 1, assuming all grazing permits are relinquished over the life of the plan. If competition occurs, it is not expected to be at levels that would threaten achieving ODFW management goals. Under all alternatives, annual adjustments in the timing, duration, or location of grazing uses would allow for adjustments necessary to address grazing management issues associated with wildlife habitat identified through Standards and Guides or other processes on allotments that are being grazed.

The likelihood of disruptions to nesting or other activities of priority species such as the grasshopper sparrow by livestock grazing activities would be the greatest under Alternative 1 and the least under Alternative 2. Livestock

**Table 4-13. Acres of BLM Lands by Potential Grazing Availability Category.**

Potential Grazing Status*	Units	Alternatives				
		1	2	3	4	5
Open	Acres	395,495	56,382	188,326	182,845	186,711
Close	Acres	0	385,692	253,748	259,229	255,363

\* Alternative 1 acres do not include some North Fork John Day River lands. All actions in Alternatives 2-5 depend on permittees voluntarily relinquishing their permits.



water source developments under any alternative would provide additional sources of drinking water for wildlife. However, the expansion of grazing impacts in previously unused areas following water development and fence construction would reduce the amount of ungrazed or lightly used forage for wildlife. This forage is preferred or more productive by some species of wildlife.

Additional livestock fencing would increase the likelihood of death or injury to wildlife as a result of collision with and tangling in fencing. Although the amount of fencing is not specified in any alternative, any shifts from Open to Reserve Forage or Closed (given permit relinquishment) under the action alternatives could include the need for fencing, which may restrict wildlife movement. Properly designed fencing reduces the likelihood of death or injury to wildlife due to entanglement, but restricting the direction of escape may increase the vulnerability of some priority big game (e.g., elk) to predation.

Under Alternative 1, nongame species habitat would be provided largely as a by-product of meeting management objectives for game species rather than as a proactive nongame management objective. Current management direction does allow for some limited proactive measures to specifically benefit nongame species. Alternative 1 would result in upland habitat diversity and structure for nongame species that is evident at a mid-scale but frequently lacking, or with reduced habitat values at the fine scale due to the livestock commodity emphasis.

Alternative 2 would provide for the highest level of quality forage, cover, and structure for wildlife since areas unallocated to livestock grazing would provide for a very high level of quality forage, cover, and structure in sagebrush, mountain shrub and other upland species habitats. Unallocated areas would become reserves in which the combined values of forage, cover, and structure would be maximized for wildlife such as antelope, deer and elk. The absence of livestock trampling and utilization would increase herbaceous cover that would benefit ungulate forage, ground nesting birds, and small mammal hiding cover and forage.

Based on the preference of some animals, such as elk, to seek out areas periodically grazed, an increase in the amount of wildlife use on private land would be likely to occur in several local areas. Under Alternative 4, cumulative consequences could result from changes in wildlife use, such as shifts of big game onto private land. These effects would be mitigated by periodic light grazing and/or prescribed burning during seasons that have the least effect on wildlife species in the area. Beneficial impacts to wildlife forage, cover, and structure would be accrued in virtually all of the alternatives where grazing use is removed. However, big game may still move on to adjacent private lands to seek preconditioned forage if not enough is provided on BLM lands.

Alternative 2 would benefit priority wildlife species the most as it would have the highest amount of acreage that would potentially be closed to grazing and the lowest amount open (Table 4-13).

Effects to wildlife associated with wild horse management include competition with big game for water resources during droughts, and local depletion of adequate forage and cover for wildlife. Under drought conditions, the presence of wild horses would increase competition for water which would periodically result in additional mortalities of pronghorn antelope, and to a much lesser extent, mule deer. The size and allocation for the wild horse herd management area does not differ between alternatives; hence, there would be no measurable differences in effects to wildlife between alternatives.

## Transportation Management and OHV Effects on Wildlife

“In summary, no terrestrial vertebrate taxa appear immune to the myriad of road-associated factors that degrade habitat or that increase mortality” (Quigley 2000).

Transportation management actions that affect wildlife include prescribed, interim, and cumulative road densities; habitat security and seasonal restrictions; Back Country Byway designation; Class II rock crawling areas; and OHV designations. Each of these actions can be related to general wildlife effects, namely habitat loss, fragmentation, wildlife displacement, and mortality. The effects of each of these actions on wildlife are reviewed separately below, and are followed by a synthesized summary of effects of Travel Management.

In general, effects of road-associated land management can be direct, such as habitat loss and fragmentation as a result of road construction and maintenance. Effects can also be indirect, such as displacement or increased



mortality of wildlife populations in areas near roads in relation to motorized traffic and associated human activities. High speed roads (state highways and paved county roads outside of the jurisdiction of BLM) have the greatest potential for direct mortality to individual animals (Gunter *et al.* 1998). Roads increase fragmentation of habitats. State highways and paved county roads contribute the most to fragmentation, as they usually have shoulders and require additional clearing of vegetation. Road surfaces and higher levels of traffic create a barrier to movement for some (mostly smaller) species. Under all alternatives, most roads under BLM management have a native surface, are rarely maintained, and do not have shoulders or extra vegetation clearing. This reduces potential effects of fragmentation compared to state highways and paved county roads.

Although road density in and of itself may not be the best measure of habitat effectiveness for wildlife (Rowland *et al.* 2000), the Interior Columbia Basin Ecosystem Management Project (ICBEMP) did one of the most extensive reviews of road-related effects on wildlife to date, and provides a larger context for the discussion of these effects on wildlife. While not prescriptive, ICBEMP used the following road density categories, which are assumed to correspond to varying levels of wildlife habitat quality: none to very low (zero to 0.1 mile per square mile), low (0.1 to 0.7 mile per square mile), moderate (0.7 to 1.7 mile per square mile), high (1.7 to 4.7 miles per square mile), or extremely high (4.7+ miles per square mile) (Quigley *et al.* 1996). In general, road densities greater than 2 miles per square mile reduce habitat security, increase fragmentation, and increase the indirect effect of human activities. The following discussion utilizes ICBEMP categories and the general 2 miles per square mile threshold in part to analyze differences in effects between alternative travel management and OHV direction.

The action alternatives contain both BLM prescribed and BLM interim road densities (defined below). Cumulative road densities from the entire plan area are used to provide a larger context to the effects analysis.

- **Prescribed road densities** represent road density objectives to be used in transportation planning for each Travel Management Area. Prescribed road densities are specified for the action alternatives (Table 4-14, Maps 13A-F and 14A-F), but not for Alternative 1 (except indirectly in the case of Wilderness Study Areas).
- **Interim road densities** represent the road density that would exist in each Travel Management Area until a Travel Management Plan or site-specific plan is completed.
- **Cumulative road density** represents the road density by inclusion of roads within one mile of BLM land, regardless of ownership. The BLM has no control over these additional roads. However, the existence and use of these other roads affect wildlife and their habitats on BLM lands. These cumulative road densities were analyzed to determine the relative contribution of the effects of each alternative and the relative ability of BLM to influence road related effects. Cumulative open road density was calculated using a 1 mile roving window (see ArcGIS 9.2, line density tool).

### **Prescribed Road Densities**

Road density prescriptions set a course of action for travel and access management that takes the needs of wildlife into account. Without road density prescriptions, the number and spatial distribution of roads resulting from management would through time, have uncertain or varying effects on wildlife. Alternative 1 does not prescribe road densities; it would continue management of the existing transportation network. Under the action alternatives, prescribed road densities (calculated on all motorized routes on BLM lands) would be implemented during planning of individual projects or during the development of the Travel Management Plan. Prescribed road densities are averages that are relevant at the level of the Travel Management Area. For instance, individual parcels of BLM land may have densities greater than 2 miles per square mile; however, all BLM lands within a prescription of 2 miles per square mile must average 2 miles per square mile or less across the Travel Management Area (Table 4-14).

Under the action alternatives, road densities would be prescribed within each of six individual Travel Management Areas (see Map 12) based on the need to reduce impacts to key wildlife habitats (see glossary) and provide recreation opportunities consistent with recreation management objectives (see Maps 13A-F and 14A-F, Table 4-14, and Travel Management in Chapter 2). Table 4-14 compares prescribed road densities within each Travel Management Area among alternatives.

If roads are managed under the action alternatives to the allowable density, prescribed road densities in the Upper John Day, Lower John Day, Rudio Mountain, and Sutton Mountain areas would be moderate relative to ICBEMP road density categories. The North Fork and South Fork would be in the high category.



**Table 4-14 Average Allowable Road Density,\*\* Interim Road Density by Alternative, and Approximate Priority Community Composition.\***

Travel Management Area (BLM acres)	Average Allowable Road Density (miles per square mile)	Interim Road Density (miles per square mile)			Priority Community Composition					
		Alt. 1	Alt. 2, 4, 5	Alt. 3	Grassland	Shrubland	Juniper	Forest	Riparian	Cliffs and Canyons
Upper John Day (9,196 acres)	1.15	3.5	1.5	3.5	0%	9%	0%	86%	5%	Low
Lower John Day (119,703 acres)	1.26	1.2	0.4	1.1	10%	85%	0%	0%	5%	High
North Fork (53,884 acres )	1.83	0.6	0.8	2.3	1%	37%	2%	55%	5%	Medium
Rudio Mountain (82,086 acres)	1.04	1.4	0.4	1.4	5%	46%	2%	45%	2%	Medium
South Fork (62,973 acres)	2.00	1.7	0.6	1.6	1%	60%	1%	35%	3%	High
Sutton Mountain (128,768 acres)	1.35	1.3	0.7	1.3	15%	81%	1%	1%	2%	Medium

\* See Appendix O for the specific wildlife species addressed by the Priority Community. See Appendix F for groupings of BpSs into Priority Communities. Approximate BpS compositions are based on visual estimates. Because cliffs and canyons are not a vegetative component, a percentage calculation was not appropriate, so a relative scale of occurrence is provided.

\*\* Average road density is based on percent composition of the Travel Management Area designated in each of the two prescribed road density standards (0 miles/square mile or 2 miles/square mile). Averages display the maximum allowable road density; however, road densities may not be managed at the maximum allowable level. Prescribed road densities are a component of Alternatives 2, 3, 4, and 5 only. Prescribed road densities do not include seasonal closures and thus reflect conditions outside of restricted periods (see Maps 12A-F and 13A-F for Seasonal Restrictions). Wilderness Study Areas in Alternative 1 do not have a prescribed road density; however, existing management direction would preclude any new road construction. Interim and average road densities are based on roads on BLM lands only. Areas with no upper limit to road density for the action alternatives were not included in these figures (approximately 3,971 acres primarily in the Rudio Mountain area).

Figure 4-7 and Table 4-15 illustrate the percentage and acres of key wildlife habitats in each road density category, as depicted by the upper limits of allowable road density. "No limit" means that no road density prescription has been proposed for these lands or alternatives. These upper limits are considered the maximum density allowed to meet wildlife and recreation objectives; they do not necessarily represent the actual road densities that would be maintained over the long term (actual road densities could be less).

Table 4-15 shows that under Alternative 1, elk summer range, and deer and elk winter ranges have the largest amount of area with no road density limits, and hence the largest future risk for wildlife habitat degradation. Differences in seasonal restrictions further distinguish differences in effects among the alternatives, and will be discussed in the habitat security and seasonal restriction section below. While sage-grouse and Washington ground squirrel make up a smaller proportion of the plan area than other key habitats, 100% of their habitats would have road density limits under the action alternatives as opposed to 0% under Alternative 1. The action alternatives vary from each other only in that Alternative 4 has road density limits for all key wildlife habitats. About 2,500 to 4,571 acres in deer and elk winter range and elk summer range would not have road density limits under Alternatives 2, 3, and 5.

Over 95% of all key wildlife habitats would have a prescribed road density under the action alternatives, as opposed to 0% in Alternative 1. The lack of direction for allowable road densities under Alternative 1 assumes a greater risk for road-related effects to wildlife and their habitats from future actions than the action alternatives.

Alternative 1 does not limit road densities in any of the Priority Communities with the exception of Wilderness Study Areas. Most Wilderness Study Areas have a shrubland Priority Community type. Conversely, the action alternatives provide allocations for allowable road density as displayed in Table 4-16.



Figure 4-7. Percentage of key wildlife habitats by prescribed road density class on BLM lands.

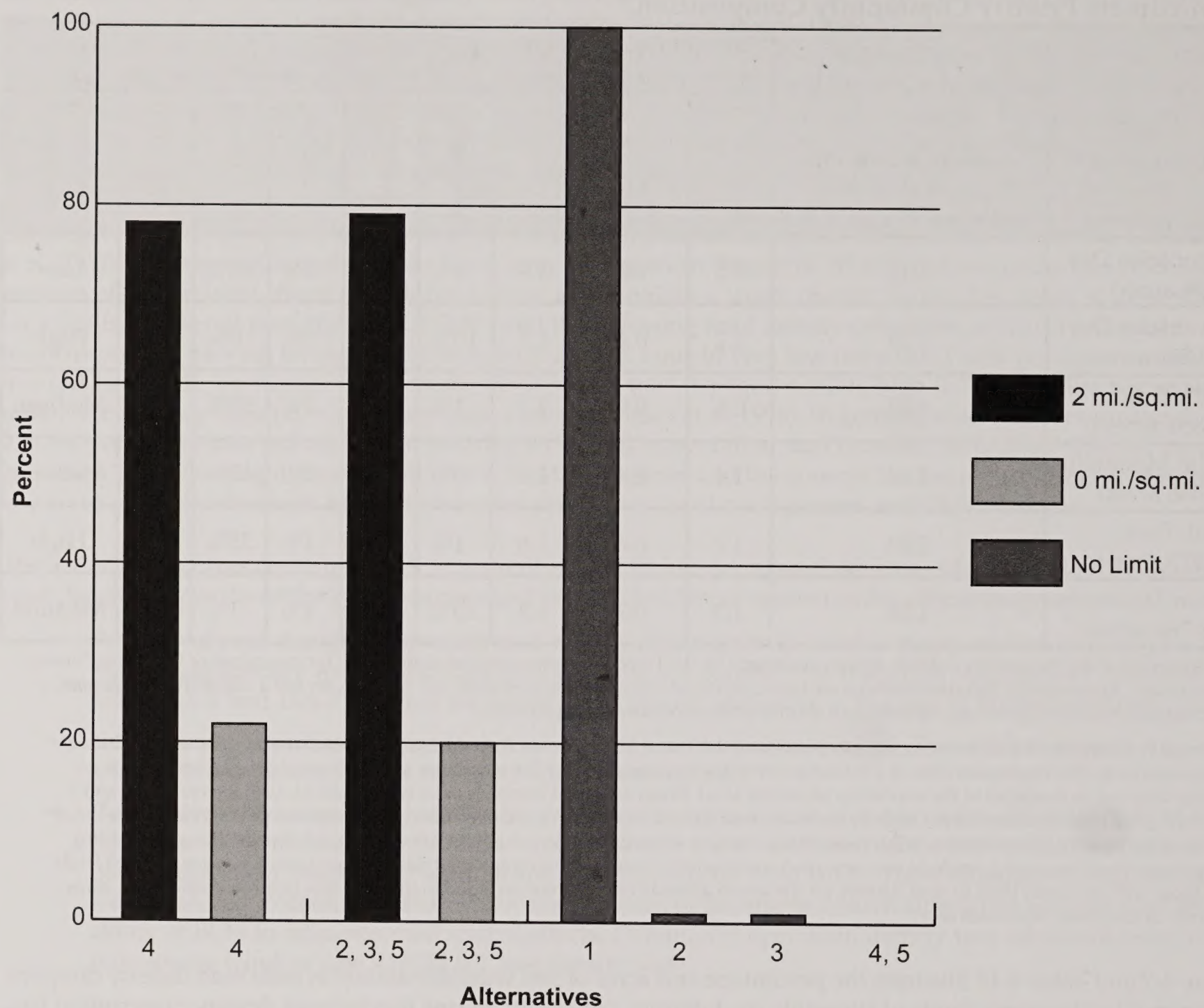


Table 4-15. Acres of Key Wildlife Habitat by Prescribed Road Density Class on BLM Lands.

Key Habitats	No Limit				0 mi./sq.mi.		2 mi./sq.mi.	
	Alt. 1	Alt. 2	Alt. 3	Alts. 4, 5	Alts. 2, 3, 5	Alt. 4	Alts. 2, 3, 5	Alt. 4
Antelope Year Round	13,709	0	0	0	58	4,538	13,651	9,171
Deer Summer Range	34,676	0	0	0	6,236	6,386	28,430	28,280
Deer Winter Range Crucial	255,038	3,971	4,569	0	63,121	72,853	186,802	177,070
Elk Summer Range	348,467	3,971	4,569	0	105,854	120,268	237,540	223,126
Elk Winter Range	209,044	2,477	2,477	0	33,412	44,638	173,122	161,896
Elk Winter Range Critical	109,887	2,477	2,477	0	2,902	9,265	104,501	98,138
Sage-grouse	58,192	0	0	0	1,300	7,360	55,192	50,832
Washington Ground Squirrel	6,332	0	0	0	0	0	6,332	6,332



**Table 4-16. Percentage of Priority Communities by Allowable Road Density Allocation on BLM Lands.**

Priority Community	Allowable Road Density				
	2 mi./sq.mi.	1.5 mi./sq.mi.	1.1 mi./sq.mi.	0 mi./sq.mi.	No Limit
Grasslands	50%	0%	0%	50%	0%
Shrublands	65%	0%	0%	34%	1%
Juniper	30%	0%	0%	70%	0%
Forest	85%	<1%	<1%	15%	0%

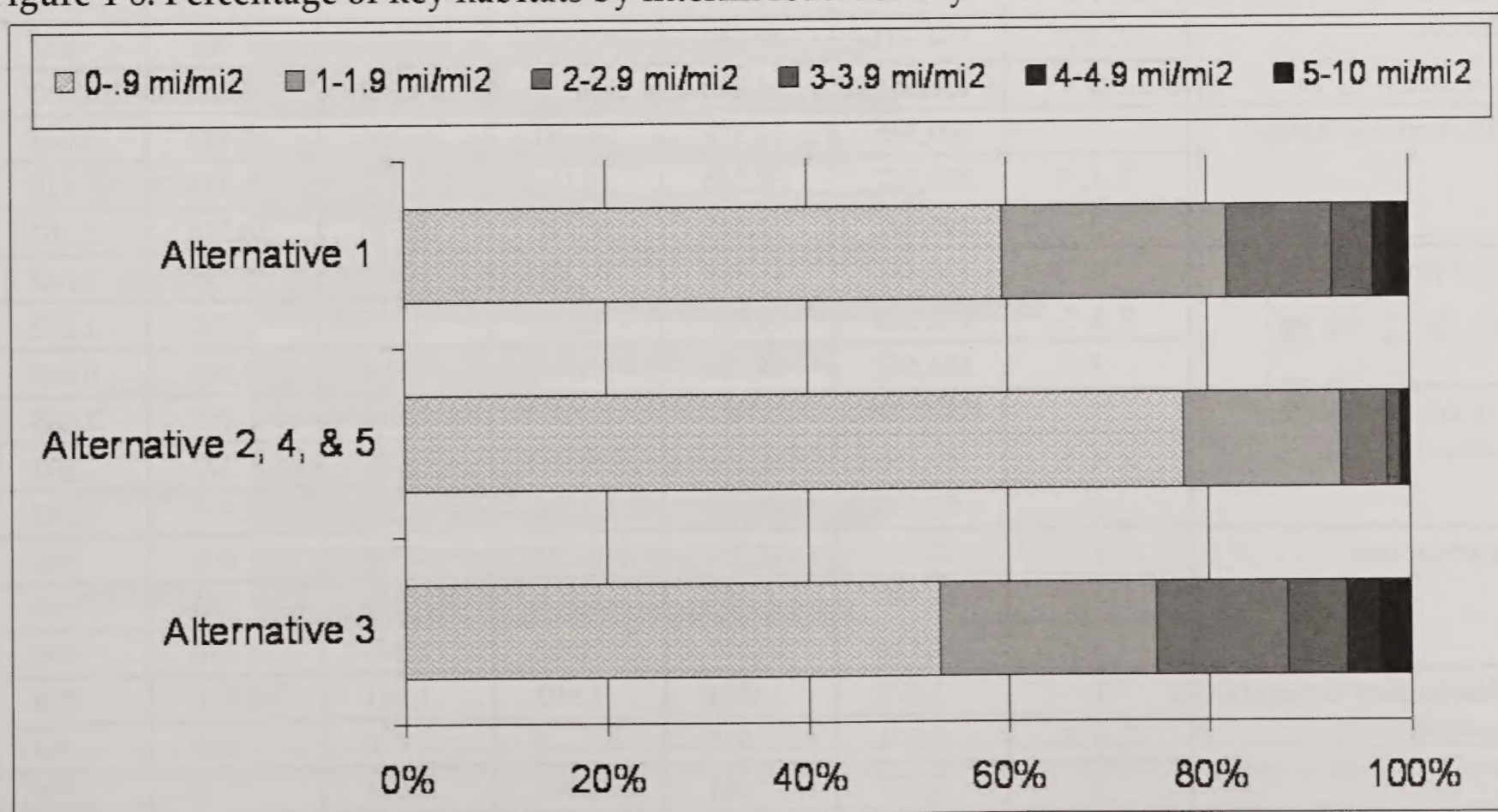
Greater direction for future transportation planning reduces the risk of road management allowing road density effects to wildlife. The majority of acres of Priority Communities and Key Wildlife habitats have no road density limit in Alternative 1, as opposed to less than one percent in the action alternatives.

### **Interim Road Densities**

All alternatives designate interim roads until a final Transportation Management Plan (TMP) is completed. Interim road densities may exist for five or more years. Implementation of a final transportation network depends on when a TMP can be completed and implemented. The action alternatives require that each new project meet the prescribed road densities regardless of whether a TMP is completed or not. Alternative 1 would maintain the existing transportation system, and manage projects on a case-by-case basis without constraints on road density. In the interim, the action alternatives would take a more proactive approach to transportation management and reduce effects of roads on wildlife more than Alternative 1.

Under Alternative 1, for the life of the plan, the Upper John Day Travel Management Area (TMA) would remain in the high density category, as defined by ICBEMP. Of all the alternatives, Alternative 1 has the lowest interim road density in the North Fork TMA area. Interim road densities for Alternative 2 and 3 in the Upper John Day TMA, and Alternative 3 in the North Fork John Day TMA currently exceed the prescribed road density limits, so future road closures would be necessary to meet wildlife objectives.

Road densities greater than 2 miles per square mile reduce habitat security, increase fragmentation, and increase the indirect effect of human activities. Figure 4-8 displays that the majority of BLM lands within key wildlife habitats

**Figure 4-8. Percentage of key habitats by interim road density calculated on BLM lands.**



are within the 0-1 mile per square mile category regardless of alternative. Under Alternative 1, approximately 19% of key habitats would have an interim road density of 2 miles per square mile or more (high to extremely high relative to ICBEMP categories), while Alternatives 2, 4, and 5 would have only about 8% of key habitats in this category. Alternative 3 has the highest percentage (26%) in the high to extremely high road density category.

Interim road densities by alternative and key wildlife habitat for BLM lands are displayed in Table 4-17. Alternative 1 and to a greater extent Alternative 3 have higher interim road densities than Alternatives 2, 4, and 5 in all key wildlife habitats. The effects of the higher interim road densities in Alternatives 1 and 3 are most pronounced in elk summer, deer and elk winter range, and Washington ground squirrel habitat.

Bate and Wisdom (2002) found that areas near roads (both open and closed) had significantly fewer snags than areas further from roads in forests of northeastern Oregon. This was particularly true if the areas were close to towns. The BLM lands in the Upper John Day and South Fork TMAs have the closest proximity to towns, while the Rudio and North Fork TMAs are the furthest. Based on the relative abundance of forest habitat and allowable road densities between Travel Management Areas (Table 4-14), habitat for wildlife species in the forest Priority Community (Appendix O) would risk losing snag habitat in the Upper John Day TMA and to a lesser extent the South Fork area under Alternatives 1 and 3.

In Alternative 1, the North Fork is the only forested area that would not fit in the moderate to high road density category based on open interim roads. The majority of forested communities in Alternative 3 are in the high

**Table 4-17. Acres of Key Habitats by Interim Road Density Category and Alternative on BLM Lands.**

Key Habitat	Alternative	Interim Road Density (mi./sq.mi.)					
		0-0.9	1-1.9	2-2.9	3-3.9	4-4.9	5-10
Antelope Year Round	1	9,587	3,227	331	520	5	40
	2, 4, 5	13,010	592	108	0	0	0
	3	9,615	3,227	303	520	5	40
Deer Summer Range	1	15,120	6,414	3,869	2,631	1,862	4,780
	2, 4, 5	25,743	2,415	3,735	1,308	243	1,233
	3	13,256	6,152	3,871	3,890	2,885	4,624
Deer Winter Range Crucial	1	154,683	56,550	26,681	11,255	3,317	2,553
	2, 4, 5	194,303	42,513	12,882	3,415	988	937
	3	136,354	54,700	35,789	14,799	7,593	5,803
Elk Summer Range	1	209,345	74,379	34,381	16,254	5,443	8,665
	2, 4, 5	275,387	50,388	14,166	4,342	1,474	2,710
	3	195,892	72,535	38,720	18,540	10,518	12,262
Elk Winter Range	1	130,481	48,959	19,398	5,821	1,738	2,647
	2, 4, 5	161,266	34,907	8,869	2,079	752	1,172
	3	106,562	44,838	29,184	12,702	9,089	6,668
Elk Winter Range Critical	1	60,971	29,907	11,697	4,322	955	2,035
	2, 4, 5	80,750	21,348	5,579	1,087	322	801
	3	52,195	28,327	17,201	7,274	2,597	2,292
Sage-grouse	1	32,923	12,752	8,204	2,508	809	996
	2, 4, 5	46,388	9,387	1,802	282	283	50
	3	34,114	13,557	7,552	1,203	770	996
Washington Ground Squirrel	1	2,377	641	1,992	1,041	0	278
	2, 4, 5	5,574	517	0	0	159	80
	3	2,377	641	1,992	1,041	0	278



interim road density category. Alternatives 2, 4, and 5 have interim road densities in the low to moderate range, except in the Upper John Day TMA.

Roads not designated as interim would in general not have physical closures on them, and thus would likely continue to receive some level of use. Havlick (1995) reviewed 802 road closure sites. Of these, 73% were not fully closed as intended due to lack of compliance. It is impossible to quantify the level of compliance expected under this RMP, but assuming there would be an equal level of compliance among alternatives, the loss of wildlife habitat and snags would be less in Alternative 2, 4, and 5 than in Alternatives 1 and 3.

Alternative 3 would have the highest open road densities in the interim of all of the alternatives.

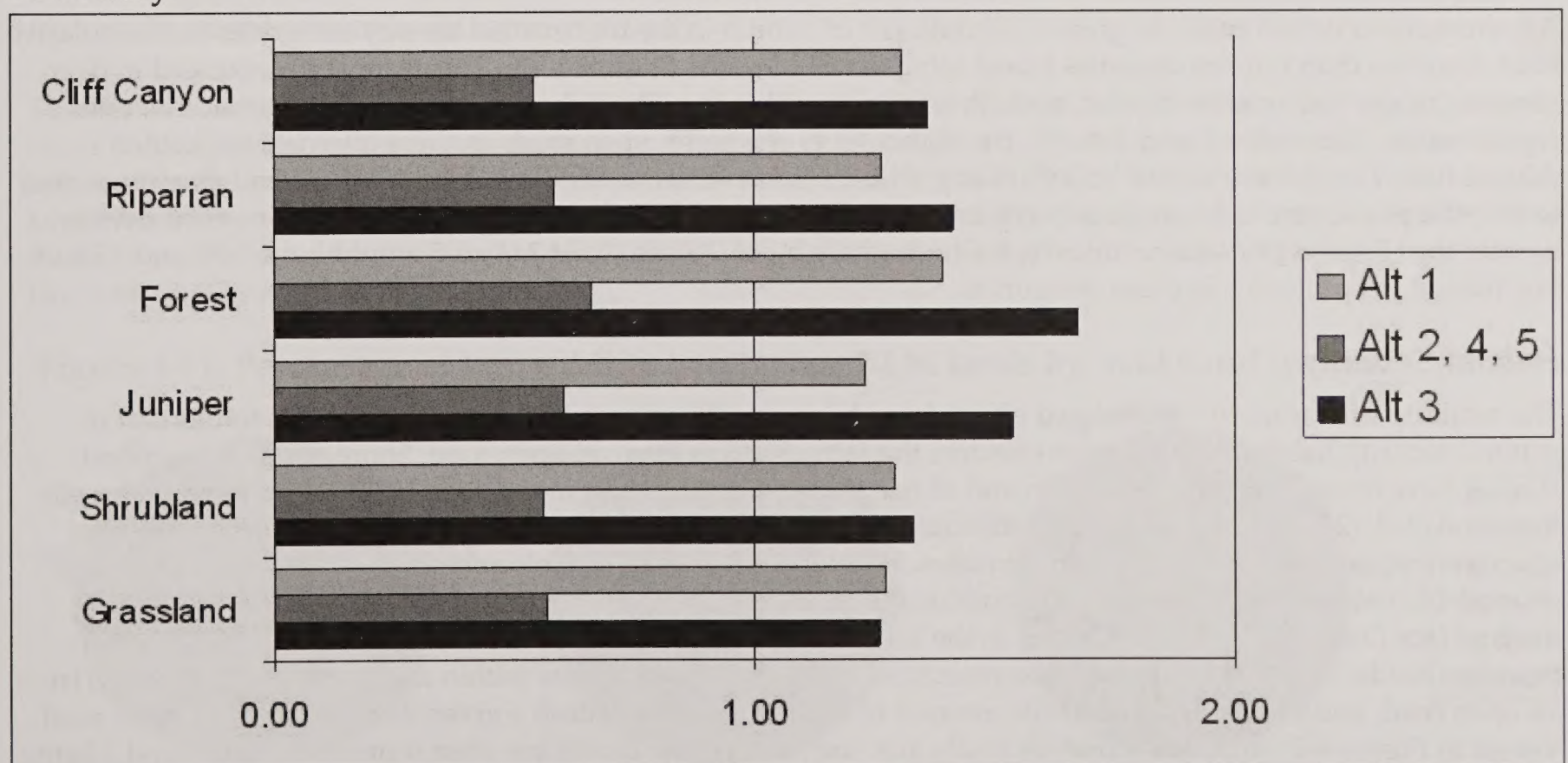
Both the North Fork and Upper John Day Travel Management Areas would be in the high category with the remaining areas in moderate for BLM lands. The North Fork area includes important habitat for several species including Lewis' woodpecker. The proposal to open numerous roads that are currently closed in the North Fork area would reduce surrounding wildlife habitat quality and quantity, including snag densities (Bate 2002).

Interim road densities are generally less than 2 miles per square mile under all alternatives and on all Priority Communities, except riparian and forest (Figure 4-9). Alternative 1, and to a slightly greater extent Alternative 3, have higher road densities (moderate category) than Alternatives 2, 4, and 5 (low category) in all Priority Communities, especially forest and juniper.

### Cumulative Road Density

The BLM has no control over the management of roads on surrounding lands; however, the existence and use of these roads have effects on wildlife and their habitats on and off BLM lands. The interim road densities vary by alternative relative to cumulative road densities. Figure 4-10 shows the type and magnitude of differences between alternatives in road density on BLM versus all land ownerships surrounding BLM. These data also show the BLM's ability to influence road related effects. Figure 4-10 shows that on BLM lands under Alternatives 1 and 3, there would be 53% of key wildlife habitat in the zero to 0.9 mile per square mile category (very low to moderate) and 25% would have road densities greater than 2 miles per square mile (high to extremely high). Alternatives 2, 4, or 5, would have 77% and 7% of key habitat, respectively, in the zero to 0.9 mile per square mile and more than 2 miles per square mile categories.

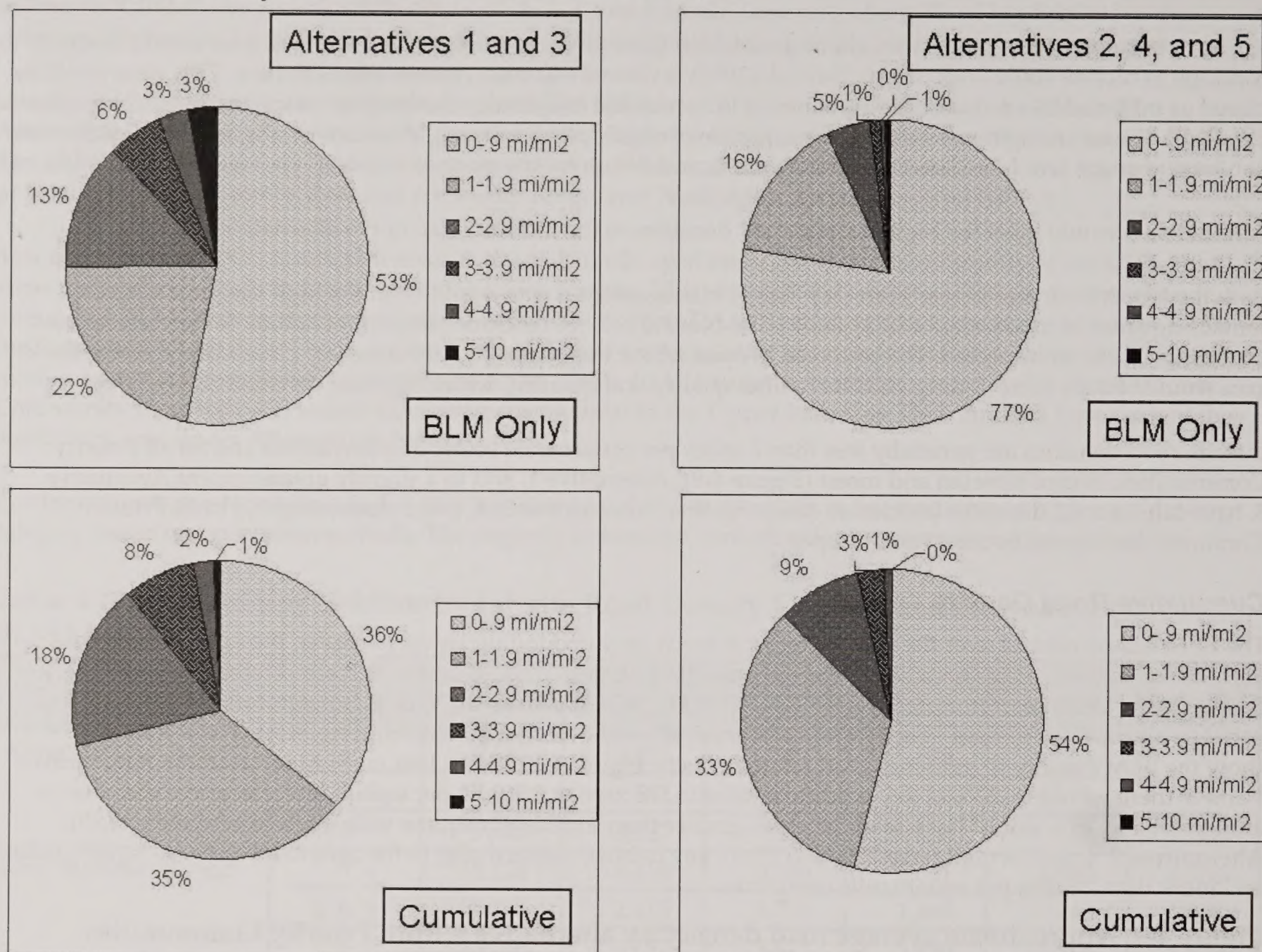
**Figure 4-9. Approximate average road density by alternative within Priority Communities BLM only.\***



\*The numbers in this figure represent averages based on the estimated percent composition of each Priority Community by area in each road density category.



**Figure 4-10. Percentage of key habitats by road density category calculated on BLM lands only versus cumulatively (all roads within 1 mile of BLM).**



All alternatives would result in greater percentages of habitat in the higher road density categories for cumulative road densities than interim densities based solely on BLM roads (Figure 4-10). This is most pronounced in deer summer range, sage-grouse habitat, and elk winter crucial range. The influence of surrounding roads is more significant in Alternative 1 and 3 due to the higher level of interim open roads in these alternatives. Under Alternatives 1 or 3, there would be 36% of key wildlife habitat that would have a cumulative road density of zero to 0.9 mile per square mile category (very low to moderate) and 29% that would have cumulative road density greater than 2 miles per square mile (high to extremely high). Alternatives 2, 4, or 5 would have 54% and 13% of key habitat, respectively, in these categories.

### Habitat Security

The majority of studies of road-related effects have been associated with big game. Lyon (1983) found that in general security habitat became more effective the farther it was from an open road. Some of the more recent studies have found that road density in and of itself may not be the best measure of habitat effectiveness for elk. Rowland *et al.* (2000) found that there was no significant relation between number of elk locations and habitat effectiveness modeling based on road densities. Habitat effectiveness models attempt to predict the percentage of available habitat that is usable by elk outside the hunting season. They proposed the use of a road banding method (see Data, Methods and Models in the introduction to this chapter) to better predict habitat reduction based on roads. Figure 4-11 displays the amount of all key wildlife habitats within the given distance (band) from an open road, and Figure 4-12 shows the amount of each key habitat within a given distance from an open road. Values in Figure 4-11 and 4-12 reflect all roads, not just BLM roads. Bands are often numbered, with band 1 being the closest to a road (zero to 394 yards); Bands 2, 3, 4, 5, and 6 occur at 395 to 788 yards; 789 to 1,182 yards; 1,183 to 1,576 yards; 1,577 to 1,970 yards; and 1,971 to 2,364 yards, respectively.



Adverse effects to wildlife and their habitat are generally greater closer to an open road. Figures 4-11 and 4-12 represent the varying level of effects from darker color (394 yards from an open road) having the least habitat security to lighter color (>2,364 yards from an open road) have the most habitat security. While there are differing levels of habitat security in each band, Rowland (2005) found that for elk, habitat use increased at 1,182 yards or more from roads.

All key habitats have higher percentages of secure habitat in Alternatives 2, 4, and 5 than would exist under Alternatives 1 and 3. This is particularly true in antelope year round and Washington ground squirrel habitats. The potential for shooting of ground squirrels from open roads is a threat to small populations like the Washington ground squirrel.

In Alternatives 1 and 3, the majority of grassland, shrubland, and juniper Priority Communities are within the first two bands (0-788 yards from an open road). For forest and riparian communities, the majority is within the first band. The exception is in the North Fork area where Alternative 1 retains most of the forest and shrublands in bands 2-4 with approximately 40% of the area greater than 1,182 yards from an open road. Alternatives 2, 4, and 5 increase the amount of forest habitat within bands 2 and 3 and increase the amount of area in band 4+ to approximately 30% for the grassland and shrubland communities. Riparian communities remain primarily within the first band with some localized reductions.

As Figures 4-11 and 4-12 illustrate, 79 to 96% of key habitats would be within the first three bands (< 1,182 yards) in Alternatives 1 and 3, versus 67 to 94% in Alternatives 2, 4, and 5. The greatest difference is in the number of acres in bands 1 and 2 with Alternatives 1 and 3 averaging near 80% and Alternatives 2, 4, and 5 averaging near 60%.

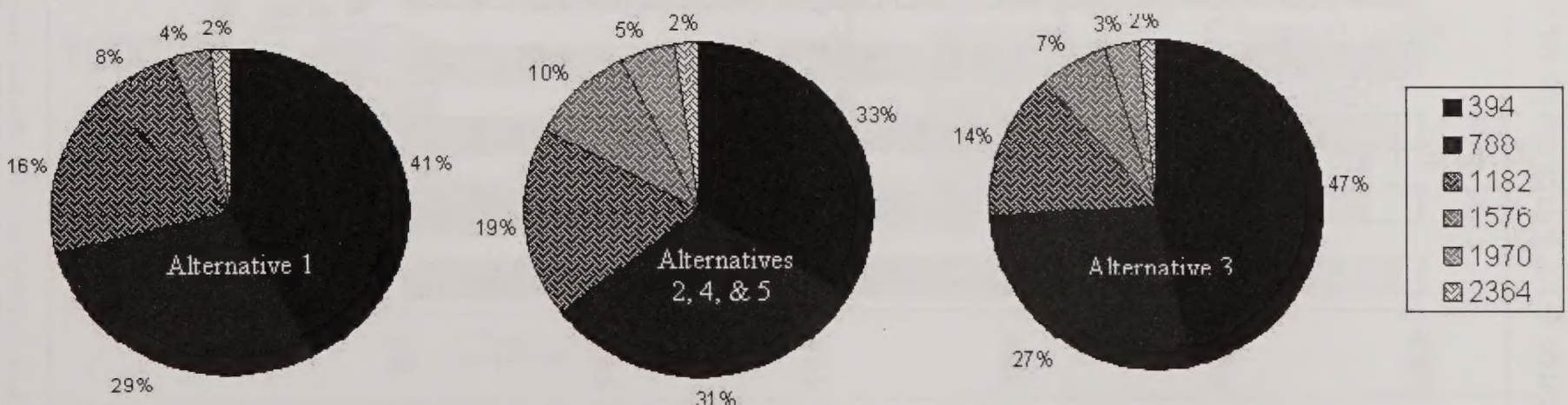
### Seasonal Restrictions

Winter is a trying time for most wildlife; the most studied and noted being big game. Disturbance on wintering habitats can cause animals to utilize critical energy reserves and avoid foraging areas with the highest quality forage. Alternative 1 currently provides seasonal road closures on 86,793 acres. The action alternatives propose seasonal closures on slightly more than 331,000 acres, or almost four times the amount of area than under Alternative 1. Within these seasonal closures, there are roads that remain open year-round (State and County roads, see Maps 12A-F and 13A-F).

Figure 4-13 shows the amount of area expected to provide security habitat (> 1,182 yards from an open road) during the critical closure period. Areas within a seasonal closure may still be within 1,182 yards of an open road due to being on the edge of the closure area or adjacent to a year-round open road within the seasonal closure (seasonally closed with reduced security habitat).

The depicted amount of seasonally closed area with reduced habitat security is higher than what would actually occur on the ground for the following reasons: (1) many of the roads considered open for this analysis are on adjacent lands and the public would have no access to them, and (2) some roads accessed through Forest Service lands would be snowed out at higher elevations (most years) or seasonally closed by the Forest Service. Optional closures under current management (Alternative 1) have not been utilized over the last 20 years and would not likely be implemented in the future.

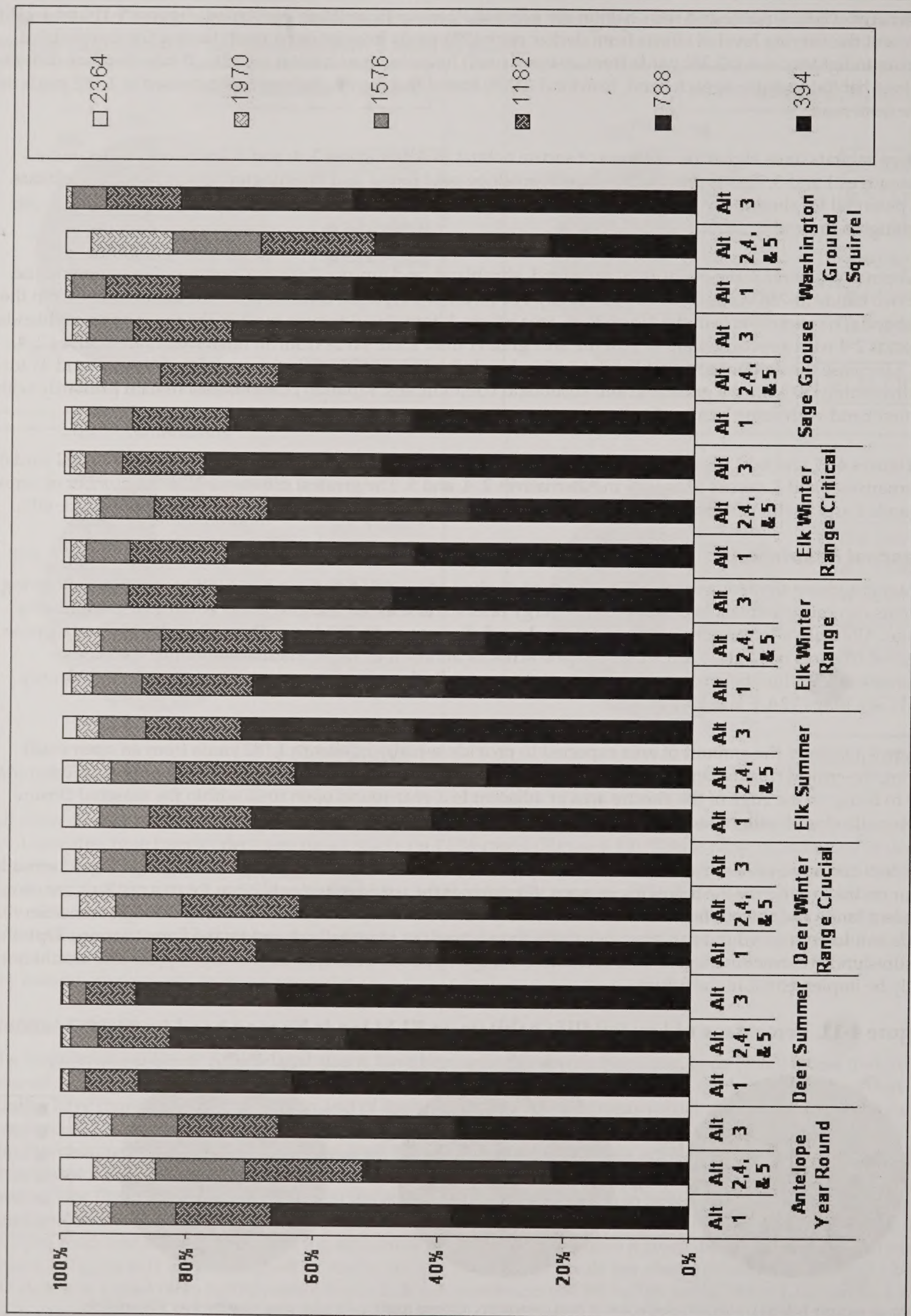
**Figure 4-11. Percentage of key wildlife habitats on BLM lands by road band (yards).\***



\*Because security habitat is affected irrespective of road ownership, all open roads in the plan area were used for this analysis.



Figure 4-12. Percentage of key wildlife habitats on BLM lands by road band (yards) and alternative.\*



\*Because security habitat is affected irrespective of road ownership, all open roads in the plan area were used for this analysis.



Figure 4-13 illustrates that the action alternatives would provide far greater amounts and distribution of secure habitat during the winter than Alternative 1. Alternative 3 differs from Alternatives 2 by about 600 acres, and Alternatives 2 and 3 differ from Alternatives 4 and 5 by approximately 5,000 acres in areas designated as Open to OHVs that would not be seasonally closed.

### ***Sutton Mountain Back Country Byway Effects on Wildlife***

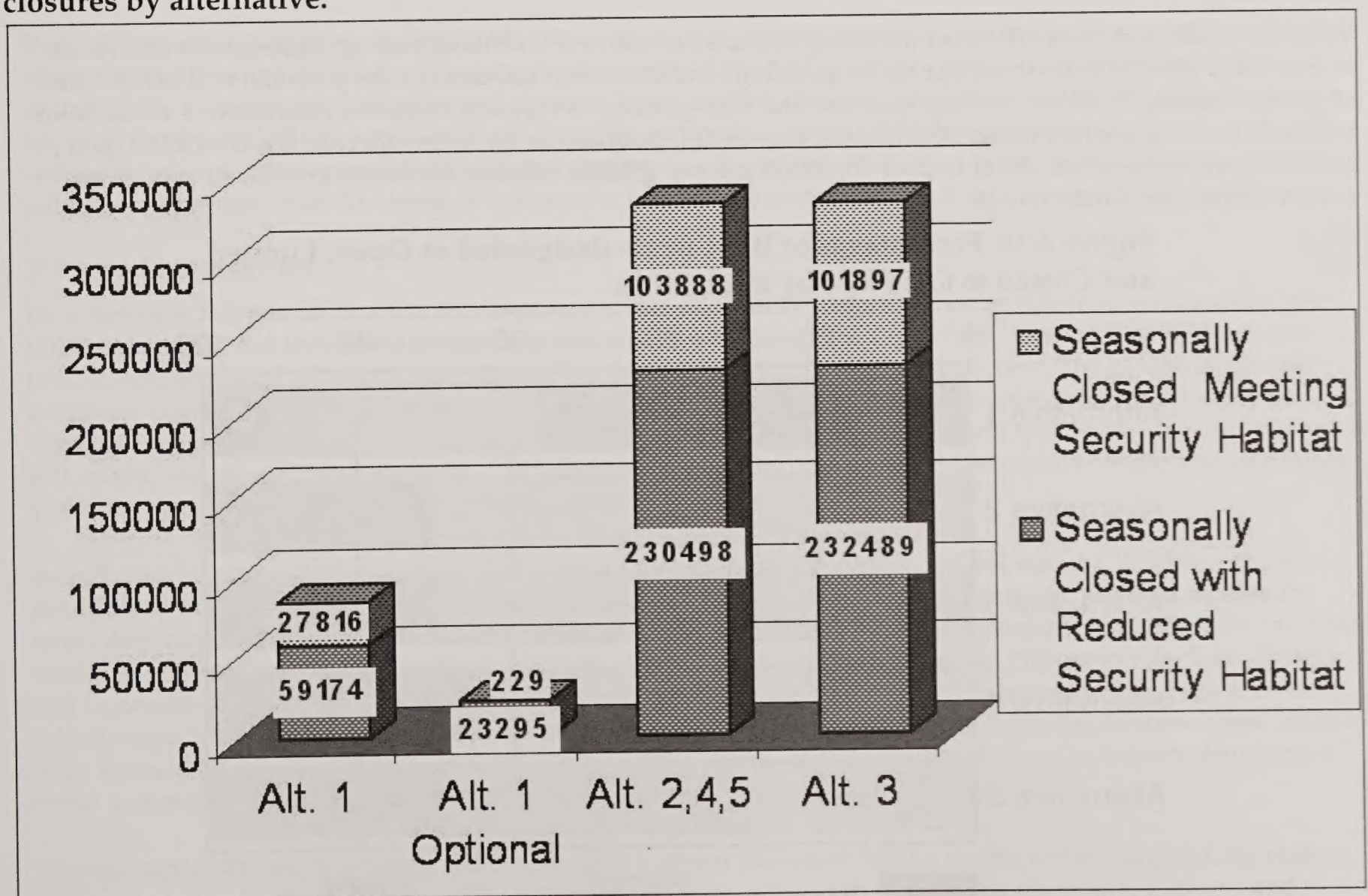
Alternative 1 does not propose creation of a back country byway around Sutton Mountain or elsewhere so use levels on the Burnt Ranch road would continue at existing levels. The action alternatives propose a back country byway around Sutton Mountain. It is hard to estimate exactly how much of an increase in road use would occur as a result of this designation, but it can be assumed that road use would increase especially during the summer tourism months.

Both deer and elk move across this road extensively throughout the year. The increased use under Alternatives 2–5 would not create a movement barrier but might increase stress and potential for collisions more than Alternative 1.

### ***Class II Rock Crawling Area Effects on Wildlife***

Alternative 1 does not propose a class II rock crawling area; however, much of the plan area is open to off road vehicle travel, so the demand for this activity would likely continue. The use would be dispersed across the landscape and continue to be unmanaged by the BLM. The action alternatives would designate trails, which would likely increase the use in the designated area. Under the action alternatives, signing and designation may increase authorized and unauthorized use across the plan area. The risk of disturbing wildlife would be high near designated trails but wildlife disturbance would be isolated to a specified location, and if use is directed to these areas the level of use across the rest of the plan area would be reduced.

**Figure 4-13. Acres of security and reduced security habitat on BLM lands within seasonal closures by alternative.\***



\*Because security habitat is affected irrespective of ownership of the road, all open roads in the plan area were used for this analysis.



## OHV Designation Effects on Wildlife

The primary effect on wildlife of OHV use is related to disturbance. Habitat destruction is usually localized with the exception of the spread of noxious weeds. The greater amount of off-road use permitted, the greater the potential spread of noxious weeds and habitat destruction. Limiting OHV use to designated roads reduces the risk of nest destruction for ground-nesting species, reduces the risk of noxious weed spread, increases habitat security, and limits the extent of habitat that can be accessed in all priority communities.

In their 2009 position paper, ODFW recommended that OHVs not be allowed for use in game retrieval of hunter-harvested big game animals. All action alternatives would preclude this use in Limited and Closed designations; see the discussion of effects of OHV designations in this section for more detailed effects discussion of Open OHV designations by alternative.

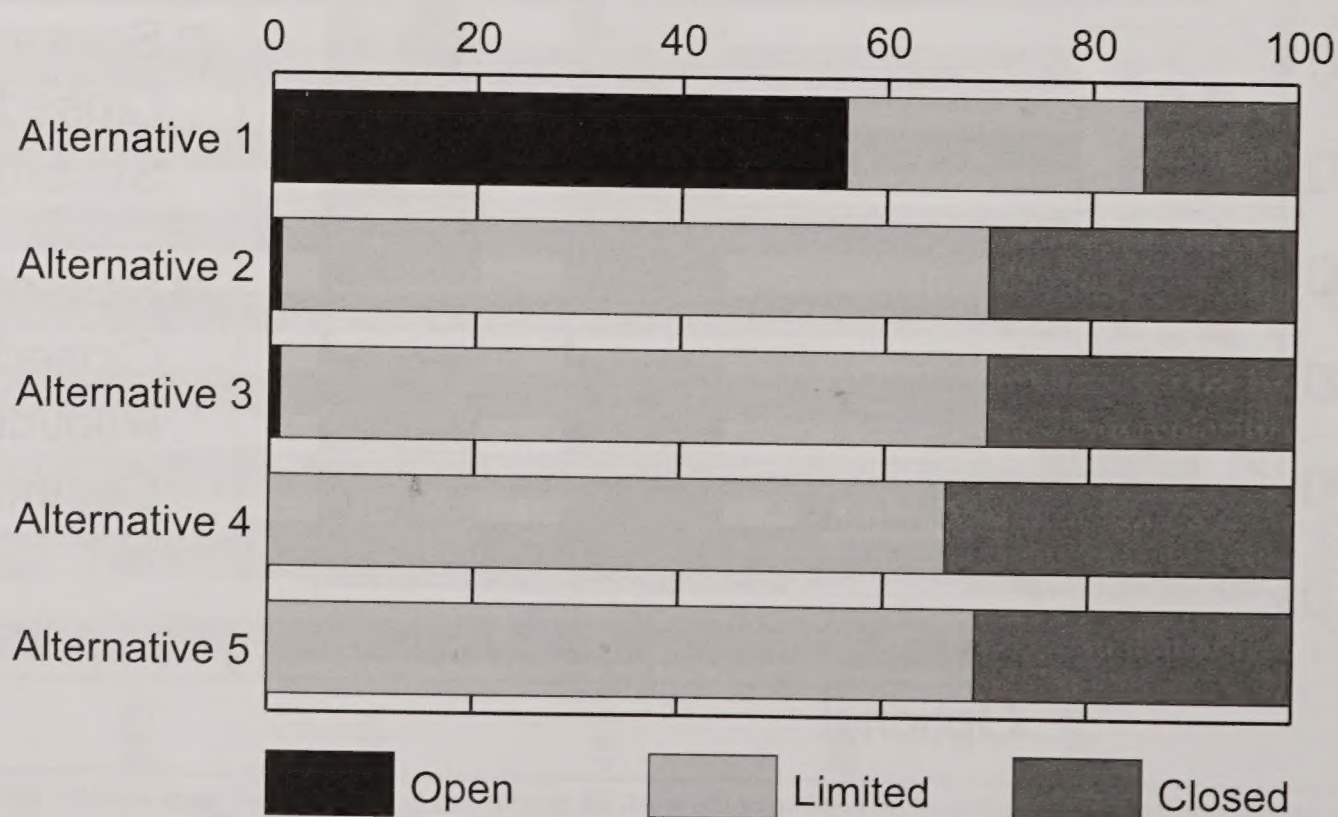
“Almost without exception, analyses of the data reveal that Off Road Vehicle (ORV) use has significant negative impacts and can reduce numbers, diversity and biomass of vertebrates” (Berry 1980, p. 451).

Figure 4-14 graphically depicts the difference between alternatives by OHV allocation. Figure 4-14 shows that the action alternatives significantly reduce the amount of area where off-road vehicle use is permitted, thus increasing habitat security. The amount of area designated as Limited triples in the action alternatives. This would help isolate impacts of vehicles to defined area and allow for greater habitat security in the remaining areas. There is also a slight increase in the amount of area closed to motorized vehicle use in the action alternatives. In general, the action alternatives reduce the amount of Open designation while increasing the amount of Limited and to a lesser extent Closed designations.

Figure 4-15 (Alternative 1) and Figure 4-16 (the action alternatives) display the amount of area in each OHV designation by key wildlife habitat. Alternative 1 would continue existing levels of OHV disturbance, habitat destruction of key wildlife habitats, and spread of noxious weeds. The action alternatives would reduce these effects commensurate with changing 90% of the area from open to limited to off-road vehicle use.

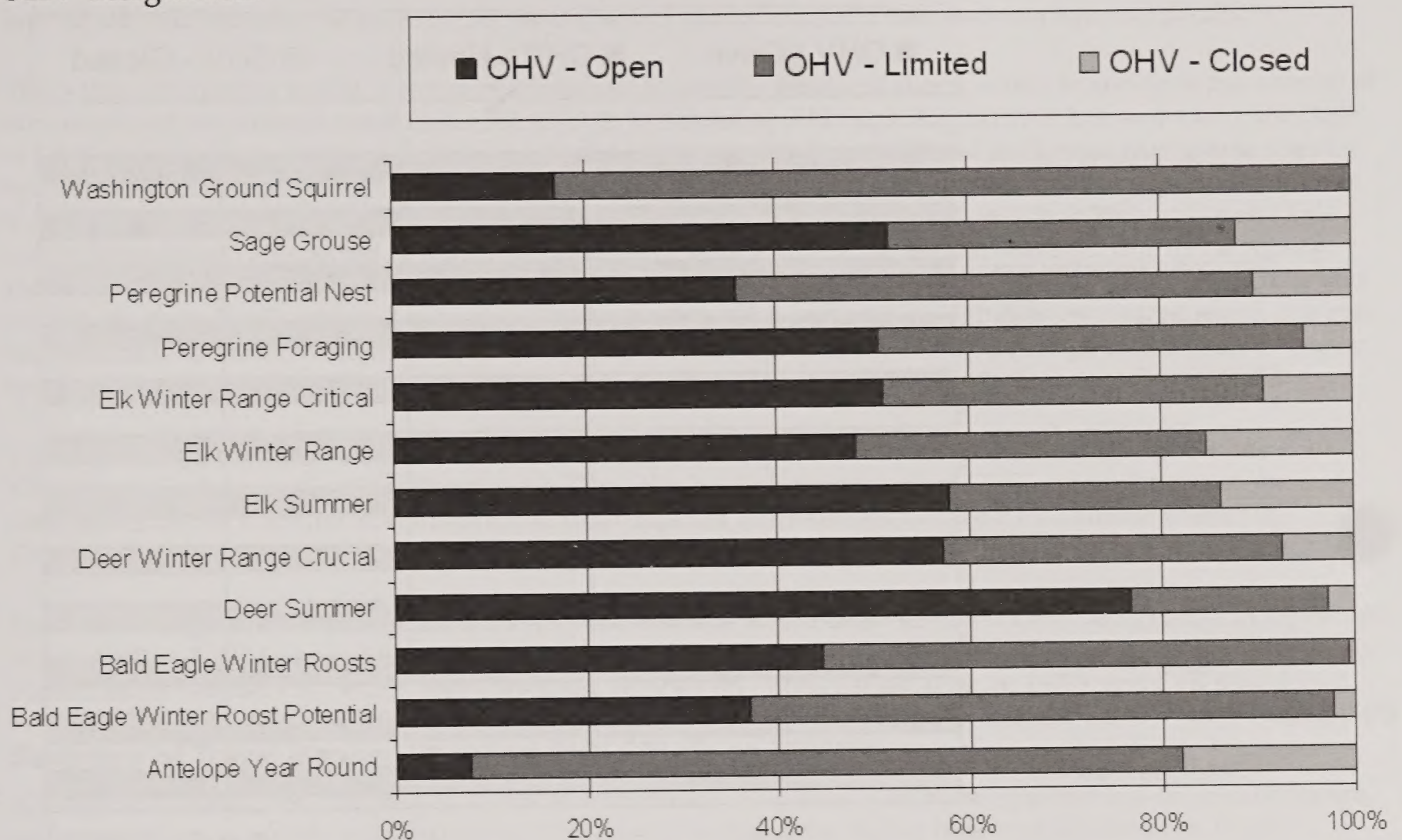
Wildlife disturbance from OHVs on wintering habitats can increase an animal's energy expenditure and result in mortality. The OHV use in the spring on grassland and shrubland habitats has the potential to destroy nests of ground-nesting birds such as sage sparrow and sage-grouse. As Figure 4-15 shows, Alternative 1 would allow off-road travel on approximately 50% of most key wildlife habitats. In the action alternatives, the OHV Open areas encompass less than 2% of each of the following key wildlife habitats: elk winter critical, elk winter, elk summer, and deer winter crucial.

**Figure 4-14. Percentages of BLM lands designated as Open, Limited, and Closed to OHV use by alternative.**





**Figure 4-15. Alternative 1—Percentage of key wildlife habitats on BLM lands by OHV designation.**



Under Alternative 2, triggers on Rudio Mountain that would determine when the designation would need to be shifted from Open to Limited for resource concerns would prevent sensitive species from becoming listed and ensure OHV disturbance of elk does not cause an “undesirable” distribution in their winter use patterns as a result of the Open OHV designation. If a Limited to designated routes OHV designation is triggered, it would reduce the risk of nest destruction for ground nesting species, reduce the risk of noxious weed spread, increase habitat security, and limit the extent of habitat that can be accessed in the shrub and forest Priority Community.

### *Priority Communities*

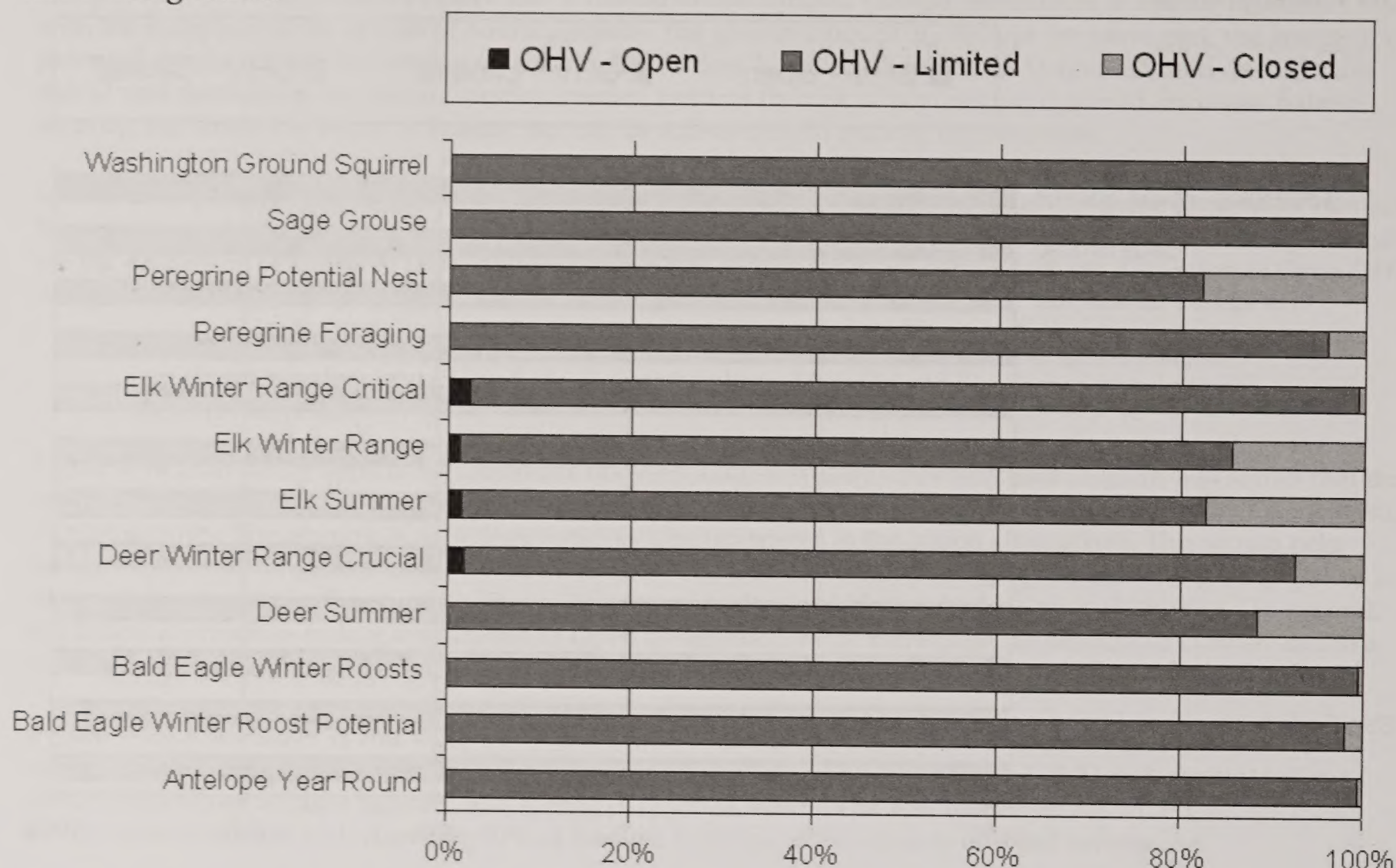
In Alternative 1, Open OHV areas are dispersed across all Priority Communities. In Alternatives 2 and 3, Open OHV areas are in the shrubland community and adjacent to forest. The Open OHV area on Rudio Mountain is used extensively by a herd of antelope and is within 0.75 mile of a golden eagle nest. The golden eagle nest is outside of any noise disturbance range. Depending on OHV use levels, the antelope herd would likely be displaced for portions of the day or year. Alternative 3 would have one additional Open OHV area approximately 600 acres in size in a shrub community outside of Mitchell. Alternatives 4 and 5 would designate approximately 4,567 less acres Open OHV area than Alternatives 2 and 3.

Sound from human activities, such as OHV use, can alter wildlife behavior and habitat use. Wildlife can also abandon favored habitat in response to sound disturbances, or incur energy expenses by reacting repeatedly when they cannot escape. Adversive levels of sound might cause wild animals to become irritable, affecting feed intake, social interactions, or parenting. All these effects might eventually result in population declines (Knight and Gutzwiller 1995). However, the type and amount of impact is highly variable based on the species, human activity associated with the habitat, and frequency, intensity, and randomness of the noise. In some cases, animals often learn to ignore disturbances that are not directed at them, and most animals seem to tolerate disturbance better in woodland than in open terrain (Knight and Gutzwiller 1995).

The majority of the approximately 3,000-acre Little Canyon Mountain SRMA is adjacent to Canyon City, state highway, or county roads. Because of its proximity to urban areas such as housing; highways; airports; and



**Figure 4-16. Alternatives 2, 3, 4\* and 5\* – Percentage of key wildlife habitats on BLM lands by OHV designation**



\* Alternatives 2, 3, 4, and 5 varied by less than 5,000 acres, so the results of 2 and 3 are displayed here. The primary difference is that open acres in Alternatives 2 and 3 are closed, and in Alternatives 4 and 5 are Limited, with the exception of 2 acres in deer summer range.

extensive historic and current activity including mining, logging, hunting, and OHV use, many wildlife species have altered or eliminated their use of the area. This is particularly true of the northern portion of the SRMA near the county road and residences.

Species of wildlife continuing to use the area have adapted to human presence. It is expected that species that more readily habituate to human activity such as coyote, skunk, and deer avoid areas where chance encounters are most likely, but continue to utilize the general area. Habituation in this case is defined as the waning of an animal's innate response to repeated exposure to stimuli that carry no discernible biological consequence.

Although species such as bear, elk, and antelope appear to be more sensitive to human activity they too have been documented to become habituated to human activity. Between 2002 and 2004, Preisler, Ager, and Wisdom studied elk disturbance associated with various forms of recreational activity. Elk were selected partially because they are a species that can be sensitive to human disturbance. This study found less travel time during disturbances in 2004 compared to 2003, suggesting that elk became habituated to these recreational activities.

"It appears that elk in this study perceived roads or trails as the location of a predictable source of human disturbance" (Preisler, Ager, Wisdom, 2006).

Habitat avoidance is expected for species sensitive to human disturbance in areas of high human activity as well as areas with higher rates of chance encounters. Chance encounters are most likely in areas of unregulated use where human use patterns are not confined to specific locations or times. Energy expenditures are greatest during disturbance. Predictable sources of human disturbance allow wildlife to reduce these energy expenditures by avoiding high encounter areas. Unregulated OHV use increases the amount of area where chance encounters can occur and decreases habitat quality.



Alternative 1 allows OHV use across the area with no restrictions on the timing, intensity, or location of use. This uncontrolled use increases the amount of chance encounters and reduces the potential use of the area by habituated individuals and increases the potential for destruction of habitat elements such as down logs and shrubs.

The action alternatives would direct recreational use to specific areas and times, which would limit the amount of area impacted and make it much easier for animals to habituate. Although Alternatives 2, 3, and 4 vary the class of OHV, time of day restrictions, and days of the week, the areas where OHV use is allowed would only vary by two acres associated with the North Pit which is within 0.25 mile of the county road. It is not expected that there would be a measurable difference in wildlife habitat use between Alternatives 2, 3, and 4. Removal of all OHV use in Alternative 5 is expected to reduce the amount of vehicle use in the SRMA; however, due to the county road, state highway, Forest Service access road, and the expected number of rights-of-way for mining claims and residences, there is still expected to be significant amounts of human activity including motorized use in this area. Human use levels under Alternative 5 are not expected to be significantly reduced enough to alter habitat use or species presence significant enough to alter broader population levels or distribution patterns.

The Little Canyon Mountain area is not currently identified as part of a reproductive home range for any Threatened, Endangered, or Sensitive species. The noise levels from prescribed OHV use under any of the alternatives do not combine with disturbance from adjacent communities to have a measurable impact on Threatened, Endangered, or Sensitive wildlife species.

There are no significant wildlife habitats or populations that would cause an Open OHV designation in the North or South pit of Little Canyon Mountain to be in violation of Executive Orders 11644 (Use of Off-Road Vehicles on Public Lands, February 8, 1972), 11989 (Off-Road Vehicles on Public Lands, May 24, 1977), and CFR 8342.1.

### **Summary of Travel Management and OHV Effects on Wildlife**

Alternative 1 would have the greatest levels of disturbance to wildlife from noise, greatest loss of wildlife forage, and greatest loss of quality wildlife habitat. This would be due to the higher interim road densities, lower amounts of area closed seasonally, the lack of upper road density or specific direction for road locations as they relate to wildlife habitats, and the high amount of OHV Open designation. These effects vary extensively across all key habitats and Priority Communities.

Alternative 3 would have the next greatest level of disturbance to wildlife from noise, greatest loss of wildlife forage, and greatest loss of quality wildlife habitat. This is particularly true in the North Fork area. Opening existing road closures in the North Fork area would increase the potential disturbance to big game (including bighorn sheep) and increase the potential for snag habitat lost to wood cutting in a key habitat area for Lewis' woodpecker. Alternative 3 would also have the highest Open OHV designation of all of the action alternatives, including approximately 600 acres outside of Mitchell that once supported a large wintering population of deer.

Alternative 4 has the least impact to wildlife and wildlife habitats. The interim road designations in Alternatives 2, 4, and 5 are basically the same. Alternatives 4 and 5 have approximately 4,500 acres less in Open OHV designation than Alternative 3 and approximately 4,000 acres less than Alternative 2.

### **Other Direction That Would Influence Travel Management Effects on Wildlife Cover**

Vegetative cover adjacent to roads can reduce the effects of the road for some species and increase habitat security. For example:

- Unsworth *et al.* (1998) found that elk in areas with roads used habitats with greater canopy cover.
- In the winter, elk in unroaded habitats increase use of open forest types. Roads through forage areas could reduce elk use of open forest by up to 90% for 500 meters when hiding cover is unavailable (Lyon 1980, cited in Buckmaster 1999).
- When roadside hiding cover is present, the road's zone of influence may be reduced to approximately 100 meters (Buckmaster 1999).

All alternatives provide direction for the retention of cover; however, the action alternatives include guidance to specifically target cover retention within 550 yards of open roads. The action alternatives have higher amounts



of land designated as Wildland Urban Interface (WUI). Areas within WUI and adjacent to primary roads would likely have reduced cover quantities directly adjacent to the roads to meet public safety requirements. Cover adjacent to those roads may be less in the action alternatives than Alternative 1.

### **Road Placement and Road Closure Prioritization Criteria**

Alternative 1 would not provide substantive direction for road location or prioritization for closure of roads to avoid important wildlife habitats. The action alternatives provide direction to avoid placement of new roads and to close existing roads in or within the influence of secure habitat (1,182 yards) and riparian communities, as well as numerous Best Management Practices (BMPs) (Appendix B).

The level of risk to special status species or habitat is generally the same for Alternatives 2, 4, and 5 with the effects slightly reducing, respectively. Alternative 3 also has a more extensive interim road network on the North Fork area. Many of the roads in Alternatives 2, 4, and 5 that were not identified as interim routes were excluded because they were in or adjacent to key wildlife habitats. Therefore, Alternative 3 has higher potential for impacts to the Lewis' woodpecker, bald eagle, peregrine falcon, and Columbia spotted frog than all other action alternatives. Alternative 1 would have the greatest risk of impacting special status species because new routes could be user-created across the vast areas with Open OHV designation. All alternatives would require changes to travel management if special status species or habitats were identified as being significantly impacted by the travel management system.

### **Recreation Effects on Wildlife**

The effects of OHV designations are addressed earlier in the transportation effects section. The discussion below summarizes the effects of developed recreation sites.

Generally, developed recreation is intended to reallocate dispersed recreation use to defined sites. All alternatives propose construction of a developed recreation site on the South Fork if negative effects of dispersed recreational use in this area become too great. Recreational development on the South Fork would occur across eight acres including each of the following habitat types: sage-grouse habitat, critical elk winter range, elk summer range, bald eagle winter roosting area, and deer crucial winter range. The action alternatives propose construction of two developed recreation sites on the North Fork. These sites would be located across 28 acres including each of the following habitat types: bald eagle winter roosting area, deer crucial winter range, elk winter range, and elk summer range.

Alternative 1 would have the least wildlife habitat loss and fragmentation from recreational development because the facilities on the North Fork would not be constructed. However, higher levels of dispersed use would occur across the area. If the South Fork campground were constructed, the campground location would be adjacent to the South Fork road which is a major road; hence, habitat loss and fragmentation have already occurred. The effect of losing eight acres of habitat is less than the potential effects of increased use in the area due to the development. Risks include wildlife disturbance, increased vehicle-wildlife collisions on the South Fork road, and increased noxious weed spread. Alternative 1 would not cause a trend toward federal listing of any of the special status species.

The action alternatives would have the greatest recreation development impact due to the creation of developed sites on the South Fork and North Fork. Impacts common to all alternatives are described in Alternative 1. The creation of two developed campgrounds along the North Fork would increase the number of summer and fall hunting season user days. The seasonal closure of campgrounds would protect bald eagle winter roosting and big game winter ranges. The majority of recreational use would be expected along the river increasing disturbance to waterfowl. During the summer, there is extensive summer range for deer and elk higher in the watershed and on adjacent Forest Service lands. Therefore, BLM recreation management would not limit deer and elk habitat.

### **Land Tenure Effects on Wildlife**

Under all alternatives, land tenure classifications would generally not directly affect species and habitats. However, the actual land exchanges, acquisitions, and disposals would add or remove habitat from BLM jurisdiction. Wildlife guidelines in all action alternatives call for retaining high value wildlife habitats or exchanging them for lands with similar or greater value. There is the potential that other resource values would benefit at the expense



of wildlife habitat values. It is impossible to predict how much of this may occur: effects to wildlife would be evaluated during implementation on a site-specific basis. The only applicable measure is the types of zoning by key wildlife habitat as an indication of potential. Figure 4-17 displays how the action alternatives designate more Z-1 (retain in public ownership lands with high public value) and Z-3 (sell or exchange them for lands with higher public value) than Alternative 1. The action alternatives would retain a greater percentage of key wildlife habitats, but would also designate approximately 10% more key habitats as Z-3 than Alternative 1. These lands are mostly scattered tracts that are more difficult to manage. Without site-specific survey, it is impossible to say if there are important wildlife structures or habitat on these parcels. Actual land exchange and disposal proposals would be analyzed through the appropriate NEPA processes on a case-by-case basis.

Table 4-18 shows the variation in land tenure zoning by alternative and Key Habitat type. The action alternatives increase the amount of Z-1 in each of the key wildlife habitats. Disposal of key habitats is a concern especially if those habitats are limited. The action alternatives propose increases in Z-3 on the following approximate percentages of the total habitat type on BLM lands in the plan area: sage-grouse (6%), bald eagle winter roost (3.5%), elk winter range (11.5%), and elk critical winter range (5.4%). Considering all zoning allocations, the action alternatives assume less risk of habitat loss than Alternative 1 due to the greater amount of lands zoned for retention.

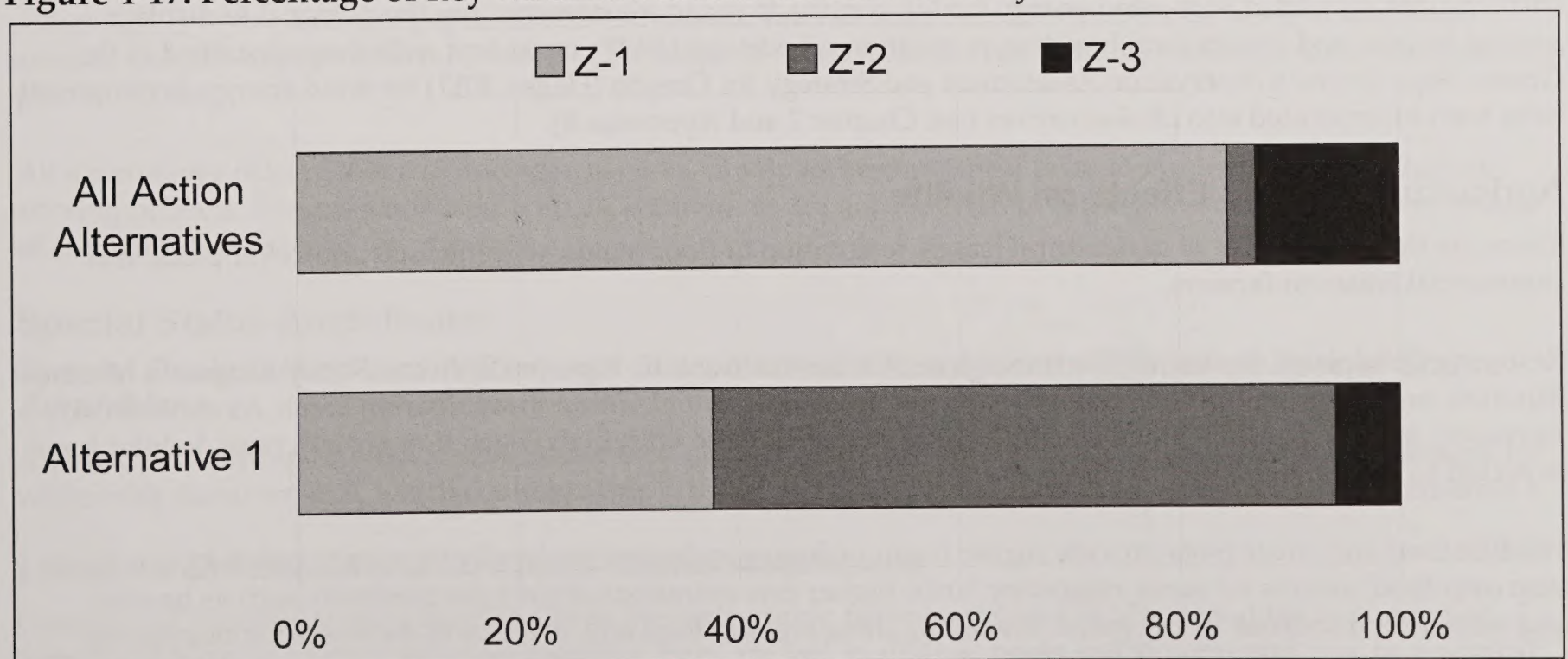
Reasonably foreseeable realty actions include several proposals for legislated land exchanges around Rudio Mountain and other areas. These land exchanges generally follow the direction and objectives of the Lands and Realty Objectives with a few exceptions, such as zoning. Based on a brief review of currently proposed tracts, the following changes of habitat management are likely:

- The loss of medium potential peregrine cliff habitat would be countered with blocking up two peregrine cliff habitat sites and surrounding them with BLM land.
- Acquisition of lands adjacent to open areas may improve enforcement and compliance in those areas.
- In other areas, acquired lands would be adjacent to wildlife habitat already designated as Limited for OHVs. Total amounts of wintering habitats exchanged would be similar; however, the exchange would block up habitats and make it easier to implement seasonal closures and habitat restoration projects.

### **Minerals and Energy Development Rights-of-Way Effects on Wildlife**

The development potential of mineral and energy resources changes through time as the technologies that allow for their extraction change. Effects to wildlife habitat or use can be short term and localized (e.g., infrequently removing material from a pit outside of critical periods), or long term and extensive in scope (installing a power or telephone line that increase the amount of raptor/corvid predation on ground nesting birds or small

**Figure 4-17. Percentage of key wildlife habitats on BLM land by land tenure and alternative.**





**Table 4-18. Acres of Key Wildlife Habitats on BLM lands by Land Tenure and Alternative.**

Key Wildlife Habitat	Alternative 1			Alternatives 2-5		
	Z-1	Z-2	Z-3	Z-1	Z-2	Z-3
Antelope Year Round	2,472	10,829	408	13,217	0	492
Bald Eagle Winter Roost	1,345	5,664	0	15,227	0	0
Bald Eagle Winter Roost Potential	7,326	7,904	0	6,802	23	180
Deer Summer	5,772	27,091	1,682	17,603	6,297	10,697
Deer Winter Range Crucial	97,521	135,605	21,894	223,502	3,949	27,281
Elk Summer	167,714	150,162	30,421	272,684	17,810	57,734
Elk Winter Range	76,768	124,601	7,553	177,122	0	31,516
Elk Winter Range Critical	26,095	83,559	119	103,436	0	6,057
Peregrine Foraging	419	2,067	0	2,486	0	0
Peregrine Potential Nest	1,932	1,011	181	3,036	0	87
Sage-grouse	6,948	51,107	0	54,509	0	3,531
Washington Ground Squirrel	6,061	0	240	6,332	0	0

mammals). Because there are no specific actions being evaluated at this time, the indicator of effects between alternatives is the level and type of protection provided to wildlife or wildlife habitats.

Alternative 1 currently has limited guidance for wildlife protection from minerals, energy, and other development than general objectives about not causing a trend toward federal listing. The action alternatives provide specific direction that restricts timing and location around important wildlife or habitat features (see Wildlife, Chapter 2). The action alternatives provide increased protection for big game security habitat, cave/bat habitat, and sage-grouse leks. They also increase the protection for Washington ground squirrels through designation of the Fourmile segment as an ACEC. The protection of wilderness characteristics on 19,442 to 35,457 acres of BLM lands in the action alternatives would also limit surface occupancy and thus reduce the risk of disturbance in wildlife habitat.

There are less than 2,300 acres of moderate to high potential wind energy locations in the plan area. The action alternatives preclude wind energy development on approximately 200 more of these acres than Alternative 1. Bat fatalities associated with wind farms have been documented around the world. It is not known at this time if any of the moderate to high potential sites are within bat movement corridors. Site-specific analysis for each proposal would be reviewed prior to approval of any right-of-way or wind tower. Alternative 1 would have slightly more risk of having wind tower or right-of-way proposals that would result in actions that intersect bat movement corridors. Disturbances associated with wind energy facility construction and maintenance has the potential to displace nesting females and impact local breeding populations. Additional BMPs consistent with those described in the Greater Sage-grouse Conservation Assessment and Strategy for Oregon (Hagen 2011) for wind energy development have been incorporated into all alternatives (see Chapter 2 and Appendix B).

### **Agricultural Leases Effects on Wildlife**

There are three categories of agricultural leases: restoration of floodplains, wildlife food and cover plots, and commercial leases to farmers.

Restoring floodplains (including the Inter-Mountain Basins Montane Riparian Systems, Rocky Mountain Montane Riparian, and Riparian BpSs) would improve cottonwood potential within these riparian areas. As cottonwood increased, so would yellow billed cuckoo habitat potential. Even with high vegetation growth rates, habitat is not expected to substantially increase for more than 20 years.

Wildlife food and cover plots provide higher levels of forage and cover for locally important upland game birds, stop over food sources for some migratory birds, higher concentrations of prey for predators such as hawks, and winter food sources for big game. Managing these areas in food and cover plots increases the number of



individuals and diversity of wildlife that utilize these sites. Food and cover plots can also keep wintering wildlife on public lands during the winter, thus reducing conflicts on surrounding private lands.

Commercial agricultural leases provide increased levels of forage, but due to the nature of the crops (generally hay or alfalfa) it is more advantageous to meadow nesting birds and big game. Because the BLM would not control the type of crop, its value to meadow nesting birds may vary from year to year. If maintained in grass hay with haying delayed until later in the summer, these sites could provide nesting opportunities for species such as bobolinks.

Alternative 1 proposes to restore 500 acres and allow 180 acres of commercial or wildlife food and cover. The commercial and wildlife food and cover would be within the currently allocated agricultural lease. Of the 180 acres, commercial use would take precedence over wildlife food and cover if demand exists. Based on current demand, approximately 50% is in commercial use. The current use of 180 acres amounts to approximately 0.33% of the relevant riparian habitats on BLM lands in the plan area.

The action alternatives propose to restore 400+ acres and would allow up to 400 acres of commercial or wildlife food and cover at any one time within the identified 1,200 acres potential. Commercial uses would not take precedence over wildlife food and cover; rather, the decision would be made on a case-by-case basis. For purposes of analysis, it is assumed that 200 acres would be managed in commercial and wildlife food and cover (based on current demand percentages). These acres would be distributed across more of the plan area than Alternative 1, which would increase their juxtaposition to a greater diversity of surrounding habitats. This increased diversity and increased acres under the action alternatives would benefit a greater variety of wildlife species when maintained in an agricultural lease. There is also increased risk under the action alternatives of noxious weed and nonnative invasion and expansion due to increased disturbance in these areas (e.g., plowing, seeding, haying equipment, increased hunter use, rehabilitation failure).

### **Summary of Effects of Actions on Priority Community and Threatened, Endangered, and Sensitive Wildlife Species**

There are 31 Sensitive species documented or suspected in the plan area and no known Threatened or Endangered wildlife species. Impacts associated with the following actions would have the greatest impact to Threatened, Endangered, and Sensitive species: travel management direction and interim road densities, OHV designations, and vegetative treatment types and locations.

Alternative 1 accepts the greatest risk that impacts from motorized use (especially off road) and vegetation changes would cause a trend toward federal listing before monitoring data would suggest a needed change in management. The action alternatives would assume less of a risk that a species habitat or population would be threatened due to actions associated with these alternatives. The reduced risk in the action alternatives is due to the combination of vegetative communities being managed for a variety of habitat components consistent with site potential and disturbance, reduced levels of off road motorized use, and criteria to direct transportation planning to protect sensitive populations and habitats. Interim road densities in Alternatives 2, 4, and 5 also assume less risk to populations by limiting the scope of motorized access to wildlife habitats until a transportation plan is written.

All alternatives require that a site-specific analysis of impact be completed prior to implementation of habitat altering projects. Actions associated with all alternatives are not expected to cause a trend toward federal listing of any wildlife species in the plan area.

### **Special Status Amphibians**

#### ***Special Designations and Wilderness Characteristics Management Effects on Special Status Amphibians***

Alternatives 2 through 5 would have greater land protections in the form of ACECs, RNAs, and areas managed for wilderness characteristics, which could provide greater protection to the Columbia spotted frog than Alternative 1.

#### ***Livestock Grazing Effects on Special Status Amphibians***

Grazing in Columbia spotted frog habitat in the early spring between the end of March and the beginning of June could have an adverse effect on breeding. Eggs are laid in shallow pools and sloughs and may be trampled



by watering cattle. Light to moderate grazing outside of the breeding season would not always be detrimental to spotted frogs. This species only thrives in low vegetation; it often disappears when the vegetation becomes too high and dense. Where vegetation is naturally low, grazing may reduce populations if grazing removes too much of the sedge/rush plant community. This leaves the frogs open to predation by great blue herons and garter snakes. The alternatives do not differ in proposed direction for season of use, so there would be negligible differences in their effects on spotted frog habitats and populations. Maintaining stubble height above 6 inches in riparian areas could mitigate adverse effects.

### ***Noxious Weed Management Effects on Special Status Amphibians***

Since the management of noxious weeds would feature essentially the same management approach for all alternatives, effects of noxious weed management on the Columbia spotted frog would be similar between alternatives. The removal of noxious weeds by means other than spraying would be more beneficial to the species.

### ***Special Status Mollusks***

#### ***Fire Management Effects on Special Status Mollusks***

Deixis consultants could not find any live Dalles mountainsnails in the Biggs area in 1995. They believe that the snail could have been eliminated by wildfires that occurred in the area in 1994. It is likely that any widespread burning of the habitat could reduce populations of the snail. This would be true for all alternatives. The greater number of acres of prescribed fire and fire to achieve resource objectives under Alternatives 2–5 may cause greater reductions in populations than Alternative 1, depending on fire locations. Following BMPs for sensitive species during project planning and implementation would mitigate any adverse effects under all alternatives.

#### ***Aquatic Habitat Management Effects on Special Status Mollusks***

Under Alternatives 2–5, additional protections would be available to springs associated with talus habitat where the Dalles mountainsnail is found relative to Alternative 1.

#### ***Livestock Grazing Effects on Special Status Mollusks***

Terrestrial snails are vulnerable to intensive grazing since they occupy the soil surface and are easily crushed by the hooves of cattle, sheep, or horses as well as those of native ungulates. Frest and Johannes (1995) consider grazing as a threat to the Dalles mountain snail and state that the species is absent from heavily grazed area. Since the species is found in talus piles, exposure to hooves would be limited except where there was an associated spring that could attract livestock. Native ungulates would not be a problem unless populations were unusually high. The threat could occur under any of the alternatives, but would likely be greater under Alternative 1 since this alternative has the potential for fewer grazing allotment closures to authorized grazing use than the action alternatives.

#### ***OHV Use Effects on Special Status Mollusks***

There are no specific rules that would protect the Dalles mountainsnail under any of the alternatives. Since there are no known populations of the Dalles mountainsnail in the plan area at present, it is difficult to say whether or not there would be an impact. The snails are found in locations that would not often be used by OHVs unless they were rock crawling on the talus slopes. Limitations of OHV use largely to designated roads and trails under Alternatives 2–5 would reduce the likelihood of an adverse effect on the Dalles mountainsnail relative to Alternative 1.

#### ***Recreation Effects on Special Status Mollusks***

Recreational activities, such as hiking and camping, would have negligible effects on the Dalles mountainsnail under all alternatives.

#### ***Vegetation Management Effects on Special Status Mollusks***

There would be little effect from terrestrial vegetation management on the Dalles mountainsnail. The locations in which these snails are found are not usually densely vegetated and would not normally need to be treated for high fuels build-up.



### **Noxious Weed Management Effects on Special Status Mollusks**

Frest and Johannes do not expressly list weed management as a threat for the Dalles mountainsnail; however, they do not consider herbicide spraying as a threat for many other terrestrial species. It is likely that they considered the Dalles mountainsnail to be found in mostly weed free areas and, therefore, safe from that threat. Where the species is found without an associated spring, spraying of infestations (such as knapweeds or dalmation toadflax) may result in an adverse impact under all of the alternatives.

### **Mineral Development Effects on Special Status Mollusks**

The use of talus as fill or to produce gravel would eliminate populations of the Dalles mountainsnail associated with the margin of springs in talus slopes within 10 miles of the Columbia Gorge. Frest and Johannes found that many populations of snails in the Columbia Gorge were decimated as talus was used in the construction of dams and railroads.

### **Effects of Current and Reasonably Foreseeable Future Management**

Future management on BLM, Forest Service, State, private, and other land within the plan area is assumed to be similar to current management. The Forest Service Schedule of Proposed Actions (SOPA) is indicative of the types of management actions that are likely to continue into the future throughout the plan area (see the list of reasonably foreseeable actions, above).

### **Cumulative Effects on Wildlife**

#### ***Vegetation, Fuel, and Fire Management***

Planning area land managers generally share the objective of reducing ladder fuels to help reduce the potential for crown fires. This includes thinning and using prescribed fire to reduce potential for stand replacing fires. Forest managers will conduct small tree thinning, underburning, hand piling, and slash lopping to reduce fuels; hazard trees removal; and recover the value of dead and dying timber damaged by wildfires. Commercial and noncommercial thinning of dry site forest and woodlands will be conducted to reduce tree competition and improve stand health and vigor, resulting in stand trajectories likely to hasten the development of larger trees. Removal of post and pole size lodge pole through personal use post and pole removal is also likely to occur at a scale (several hundred acres) not expected to influence availability and BpS distribution within the planning area.

Land managers across the plan area will continue site-specific treatment of invasive plant species on thousands of invasive plant sites. Treatment methods include herbicides, manual, mechanical, and cultural treatments. The National Programmatic EIS for Vegetation Management addresses the cumulative effects of these types of activities.

Early spring or fall prescribed burning of native open forest and grasslands by other public and private land managers in the plan area will increase vegetation growth and vigor, rejuvenate brush and increase brush sprouting, stimulate grass production, open some closed canopy, and reduce ladder and ground fuels. The end result is decreased risk of stand-replacement fires as well as increased forage value, primarily for ungulates. Local impacts to nesting birds due to spring burning are possible if burns coincide with nesting seasons.

#### ***Lands and Realty***

Landowners continue to seek opportunities to consolidate ownership of Federal, state, and private lands. Assuming that national trends in the migratory patterns of retirees to the inland Northwest continue, private lands are likely to become subdivided into smaller parcels for retirement homes and recreation uses. Local disturbances and losses of habitats due to development are likely to increase with increased population and recreation uses.

The Forest Service will continue to issue special use permits for rights-of-way of primary power lines with 40-foot poles across the plan area. Other utility corridor permits may be issued for buried utility corridors. The number of communication corridors and sites such as fiber optic cable and cell towers is likely to increase with increasing demand, resulting in short-term construction-related disturbances and potential loss of habitat with corridors where vegetation is removed.



## **Livestock Grazing**

The Forest Service will continue to authorize and permit livestock grazing on most of their allotments. Re-authorizations will likely continue according to current grazing management. Grazing management will be modified in authorizations if existing grazing management does not demonstrate maintenance of desired conditions or movement toward desired future condition described in Forest Land and Resource Management Plans. A few Forest Service allotments may be removed from permanent allotment status. Fencing is likely to continue within and around Forest Service allotments. Effects to wildlife due to livestock grazing on Forest Service lands are likely to be similar to those identified on BLM lands.

## **Mining**

The Forest Service will analyze existing and proposed mining plans of operations for active mining operations, such as those within the Lower Granite Creek Watershed. Land managers will continue to close abandoned mines by filling in adits (see glossary), trenches, and shafts with earth and rock from existing mine spoil piles and recontouring slopes adjacent to work area. Closure and filling of adits and mine shafts has the potential to reduce local roosting habitat for several bat species.

## **Recreation**

Forest Service recreational camp sites will likely increase and will include attributes such as handicap accessible tables, fire rings, concrete vault toilets, gravel parking spurs and access roads, bulletin boards, signs, shelters for winter and summer use, and possible placements of boulders around campground perimeters. Land managers may remove and replace toilets in or adjacent to existing footprints. Some projects will relocate parking areas, construct new sections of trail, and adjust interpretive signing. In addition, fences will be constructed to minimize conflict between recreation and other uses. Increased recreation facilities and access may affect local wildlife via increased disturbance.

## **Planning**

The Forest Service will eventually update their forest plans for the Umatilla, Wallowa-Whitman, Malheur, and Ochoco National Forests. This will afford an opportunity to address issues similar to those addressed in this BLM plan. Forest Service plans are not likely to propose radical adjustments from current land management (except for complying with updated travel management regulations), but are likely to add flexibility and resource protection.

The combination in the action alternatives to limit most OHV use to designated routes, close allotments to grazing where necessary, and implement ecologically appropriate vegetative treatments will together increase the likelihood of reaching ARV objectives over existing management (Alternative 1). The action alternatives will also better facilitate the use of fire to achieve resource objectives, and reduce the potential for spread of noxious weeds.

All alternatives have BMPs that would limit the impacts of multiple treatments on any one piece of ground.

# **Wild Horses**

## **Introduction**

Analysis of the environmental consequences of the alternatives on wild horses considered the following key resources or resource uses: Vegetation (management), Livestock Grazing (water development), and Recreation Opportunities.

Indicators used to compare environmental consequences between alternatives include wild horse habitat quality.

Wild Horses on the Murderer's Creek Wild Horse Management Area (HMA) will be managed the same in all alternatives. The Management Plan for the HMA was revised in October 2007 and will guide BLM management activities.



Alternatives 2–5, which contemplate increased acreages of tree thinning, would provide increased forage for wild horses. Habitat would also be improved to a greater extent by fuels treatments under Alternatives 2–5 than Alternative 1.

Additional water developments will benefit wild horse habitat. Since Alternatives 2-5 propose a greater number of allotment closures if the permit is relinquished than Alternative 1, they may not result in as many new water developments.

Under all alternatives, increased levels of recreational activities (such as more OHV use in the Murderer's Creek HMA) will increase harassment of wild horses and may render some habitat unavailable to wild horses, at least seasonally.

## Lands with Wilderness Characteristics

### Introduction

Managing certain lands outside of Wilderness Areas and WSAs to protect their wilderness characteristics would help protect the natural condition on these areas and provide opportunities for solitude or primitive and unconfined recreation.

Analysis of the environmental consequences of the alternatives on lands identified as having wilderness characteristics considered the following key resources or resource uses: Vegetation, Fire and Fuels, Wildlife, Wild Horses, Visual Resources, Special Designations, Paleontological Resources, Cultural Resources, Livestock Grazing, Recreation Opportunities, Access and Travel Management, Energy and Mineral Resources, and Lands and Realty.

Indicators used to compare environmental consequences between alternatives include: number of acres found to have wilderness characteristics that are identified for protection of their wilderness characteristics.

### Lands with Wilderness Characteristics Assumptions

- Managing lands with wilderness characteristics under VRM Class II objectives will provide a balance between protecting visual resources and allowing limited vegetation treatments to occur under some alternatives. Vegetative treatments may include limited mechanical treatment of juniper and thinning of diseased forests and woodlands for the purpose of maintaining or restoring ecological condition and long-term wilderness characteristics.
- Proposed projects and uses such as fuels treatments, noxious weed control, riparian or wildlife habitat improvements, wild horse management, and livestock improvements on lands identified as having wilderness characteristics would be evaluated on a case-by-case basis to ensure that any reductions in wilderness characteristics are temporary, and wilderness characteristics are maintained or enhanced over the long term. For most projects, temporary reductions in wilderness characteristics would recover through active or passive rehabilitation in less than five years. In the case of mechanical treatment of juniper and thinning of diseased forests and woodlands, wilderness characteristics would return to a treated area gradually as cut stumps decay and become less visible. Possible methods to speed the decay of stumps (such as prescribed fire) may be considered; however, the rate of decay varies with natural processes and is uncertain. Over the long term, the wilderness characteristics of a treated area would be enhanced.

The following resources or resource uses will have no substantive effects at the planning scale on lands identified as having wilderness characteristics: Soils, Air Quality, Native American Uses, and Recreation Opportunities (Recreation Permits and Special Recreation Management Areas). No known aquatic resources projects are proposed in lands identified as having wilderness characteristics. There are no known BLM lands managed for agriculture or significant Cave Resources that overlap lands with wilderness characteristics. In all alternatives except Alternative 4, none of the existing or proposed ACECs or RNAs overlap lands identified as having



wilderness characteristics. Alternative 4 has 2,400 acres proposed for designation as ACEC and that overlap areas to be managed for the protection of their wilderness characteristics.

## **Analysis of the Effects of the Alternatives on Identified Lands with Wilderness Characteristics**

For those lands where the BLM wilderness inventory update did not find wilderness characteristics to exist, there would be no effects to wilderness characteristics.

### **General Effects on Lands with Wilderness Characteristics Not Managed for Protection of Such Characteristics**

Under Alternative 1, the BLM would not manage lands identified as having wilderness characteristics located outside of existing Wilderness Areas and Wilderness Study Areas for protection. These characteristics would not necessarily be retained. Under Alternatives 2, 3 and 5, 16,015 acres of land with wilderness characteristics would not be specifically managed for the protection of those characteristics. The wilderness characteristics would not necessarily be impacted, but the potential for impacts exists. The BLM would continue to manage these lands the same as similar and adjacent lands. In some cases, the similar and adjacent lands are offered protections through decisions concerning visual resources, OHV designations, mineral resources, and rights-of-way that will protect elements of wilderness characteristics (see Table 4-19. Land Use Allocations that Protect Elements of Wilderness Characteristics). Where areas are not specifically managed to protect their wilderness characteristics, the BLM may allow actions such as mechanical vegetation treatments and route and facility construction that would not be allowable under VRM Class II objectives. For example, large-scale mechanical treatment of juniper or forest stands may result in large clearings containing tree stumps, making man's influence clearly visible. Permitting new right-of-way authorizations, allowing oil and gas leasing, and allowing wind energy development could result in new roads and new utility lines, which could increase noise from motorized activity. These highly visible and audible uses would reduce the natural character of the surrounding landscape and likely reduce the opportunity to experience solitude in the area.

### **Vegetation Management Effects on Lands with Wilderness Characteristics**

Continuing existing management in Alternative 1 would allow mechanical vegetative treatments to continue within existing restrictions. Such treatments have the potential to reduce the naturalness of lands with wilderness characteristics until cut stumps decay to the point that they no longer appear unnatural to the common observer. In Alternatives 2, 3, and 5, limited mechanical treatment of juniper and thinning of diseased or overstocked timber consistent with VRM Class II objectives on approximately 40% of the 19,442 acres managed to protect wilderness characteristics would help maintain or restore ecological condition and long-term wilderness characteristics. Proposed vegetation treatments would be evaluated on a case-by-case basis to ensure that any reductions in wilderness characteristics are temporary, and wilderness characteristics are protected over the long term (see Assumptions above). Alternative 4 would not allow mechanical vegetation treatment on 35,457 acres that possess wilderness characteristics. The lack of mechanical treatment on phase III juniper stands and overstocked forest stands has the potential to result in negative ecological trends that would reduce the sites productivity and result in conditions that do not represent a natural state for those plant communities. Noxious weed control would be permitted regardless of the alternative selected.

### **Fire and Fuels Management Effects on Lands with Wilderness Characteristics**

Under Alternative 1, all wildfires would be suppressed and there is no direction for the use of fire to achieve resource objectives. Actions such as mechanical treatment or uncharacteristic wildfire alter the vegetation and change the landscape's texture, color, and pattern. Full suppression frequently alters the landscape and increases accessibility with construction of routes and travel with mechanized equipment. As the landscape is altered and access increases, naturalness and solitude would be reduced.

Managing fire within the full array of appropriate responses under Alternatives 2-5 would move the landscape vegetation toward attainment of natural fire regimes. Use of fire to restore the vegetation translates into less mechanical disturbance of the vegetation. When using fire to achieve resource objectives, minimum impact management tactics would be used and a Resource Advisor would bring forward concerns specific to protecting



wilderness characteristics. In combination, the restoration of natural fire regimes, the reduction of mechanical disturbances, and the use of a Resource Advisor would all promote naturalness.

### Wildlife Management Effects on Lands with Wilderness Characteristics

Greater seasonal area closures for motorized vehicles as proposed in Alternatives 2-5 would have very little effect compared to current management (Alternative 1) or the other action alternatives on areas managed to protect wilderness characteristics, as there are currently very few routes open to motorized use. Current winter use of these routes is minimal, and some of the winter activities are illegal in nature, including unauthorized wood cutting and access for unauthorized cross-country vehicle use associated with horn hunting. Closing the designated routes to motorized use during winter months may help reduce incidences of illegal activities, requiring all users to travel by foot, horse, or boat during the winter season.

### Wild Horse Management Effects on Lands with Wilderness Characteristics

Under all alternatives, proposed wild horse management projects would be evaluated on a case-by-case basis. Under the action alternatives, evaluations of projects proposed on lands with wilderness characteristics that will be managed to protect such characteristics would ensure that any reductions in wilderness characteristics are temporary, and these values are protected over the long term.

### Visual Resources Management (VRM) Effects on Lands with Wilderness Characteristics

Under Alternative 1, the BLM would not offer specific protections for lands identified as having wilderness characteristics, and the visual resources of these lands would be managed similar to adjacent lands. Under the action alternatives, providing VRM Class II management for lands managed for wilderness characteristics would help protect the naturalness element and provide a balance between protecting visual resources and allowing some fuel treatments to occur, including limited mechanical treatment of juniper and thinning of diseased or overstocked timber (see Table 4-19).

### Special Designations Management Effects on Lands with Wilderness Characteristics

Management of designated Wild and Scenic Rivers and WSAs would continue as under current management, and would not differ in effects between alternatives. Under the action alternatives, protective management of lands with wilderness characteristics that are adjacent to WSAs may offer some additional protection to these WSAs in some cases, such as reduced incidence of unauthorized motorized vehicle use and reduced visual effects from adjacent energy, mineral, or facility developments. There are no eligible or suitable Wild and Scenic Rivers overlapping lands with wilderness characteristics. Under all action alternatives, if Sutton Mountain WSA were released from consideration for wilderness by Congress, management direction for the Black Canyon ACEC/RNA would preclude road construction and mechanical treatments thus protecting the wilderness characteristics.

**Table 4-19. Land Use Allocations that Protect Elements of Wilderness Characteristics.**

	Acres Identified for Protection of Wilderness Characteristics*	VRM Class II	OHV Closed or Limited	ROW Avoidance or Closed	Mineral Resources Avoidance, NSO, or Closed	Repetitive Mechanical Vegetation Treatments Prohibited	Road Density of 0 mi./sq.mi.
Alternative 1 Existing Management	0	18,582	14,929	17,817	2,000-5,299**	0	0
Alternatives 2, 3, 5	19,442	30,633	30,633- 32,169 ***	35,457	35,457	12,275	19,442
Alternative 4	35,457	35,457	35,457	35,457	35,457	35,457	35,457
* Total of 35,457 acres identified with wilderness characteristics. ** Acreage depends on mineral type. *** Acreage depends on alternative selected.							



## **Cultural and Paleontological Resource Management Effects on Lands with Wilderness Characteristics**

Under all alternatives, proposed cultural and paleontological resource projects such as excavations would be evaluated on a case-by-case basis. Under the action alternatives, evaluations for projects proposed for areas managed to protect lands with wilderness characteristics would ensure that any reductions in wilderness characteristics are temporary and that wilderness characteristics are protected over the long term.

## **Livestock Grazing Effects on Lands with Wilderness Characteristics**

Most lands identified as having wilderness characteristics currently have active grazing allotments. Livestock grazing in lands with wilderness characteristics would continue as under current management and would not differ in effects between alternatives, except when considering new livestock developments. Under the action alternatives, evaluations of livestock developments proposed for areas managed for protection of wilderness characteristics would ensure that any reductions in wilderness characteristics are temporary and that wilderness characteristics are protected over the long term.

## **Recreation Management Effects on Lands with Wilderness Characteristics**

### **Facilities**

Areas managed for protection of wilderness characteristics would be closed to construction of new buildings under Alternatives 2-5, but would be open to new construction under Alternative 1, with the possibility of adversely affecting their wilderness characteristics.

### **OHV Management**

Continuing existing management under Alternative 1 would continue current OHV restrictions, limiting vehicle use to signed designated routes for all of these lands except Big Canyon, which is currently open to cross-country vehicle use. Alternatives 2-5 would limit OHV use to signed designated routes on all lands managed to protect wilderness characteristics, including Big Canyon, which would help prevent new unauthorized routes from being created, reduce unauthorized cross-country vehicle use, and prevent the spread of noxious weeds (See Table 4-19).

## **Travel Management Effects on Lands with Wilderness Characteristics**

Areas with wilderness characteristics currently contain no roads. Alternative 1 would not limit new road construction in these areas; should construction of new roads occur across these lands, it would reduce their naturalness and wilderness characteristics. The action alternatives would preclude new road construction on those areas managed to protect wilderness characteristics. The limitations on new road construction would apply to the greatest number of acres in Alternative 4, which would protect 16,015 more acres with wilderness characteristics than would Alternatives 2, 3, or 5.

## **Energy and Mineral Resources Management Effects on Lands with Wilderness Characteristics**

Continuing existing management under Alternative 1 would allow energy and mineral development of these lands to continue within existing restrictions to protect wilderness characteristics. In Alternatives 2-5, managing lands to protect wilderness characteristics as available for mining operations (provided that the proposed use would not affect wilderness characteristics), and under no-surface-occupancy requirements for fluid mineral development and closing them to wind energy development, would better protect their wilderness characteristics. Alternative 4 would provide these protections to 16,015 more acres than Alternatives 2, 3, or 5.

## **Lands and Realty Management Effects on Lands with Wilderness Characteristics**

### **Land Tenure**

Those lands for which wilderness characteristics would be protected (0 in Alternative 1; 19,442 acres in Alternatives 2, 3, and 5; and 35,457 acres in Alternative 4) are designated as Z1 and thus would not be available for exchange or sale.



## **Use Authorizations**

Continuing existing management under Alternative 1 would allow rights-of-way to be issued on lands with wilderness characteristics within existing restrictions. In Alternatives 2-5, identifying lands that would be managed to protect wilderness characteristics as right-of-way exclusion areas would help to protect their wilderness characteristics by preventing new development; Alternative 4 would provide this protection on a greater number of acres (see Table 2-23).

## **Cumulative Effects on Lands with Wilderness Characteristics**

The character of adjacent state or private lands is not considered when evaluating the wilderness characteristics of a wilderness inventory unit. Independent actions on adjacent lands would not have an effect on lands identified as having wilderness characteristics. Where BLM inventory units are adjacent to USFS or NPS lands managed with a wilderness emphasis by those agencies, BLM evaluated the opportunity for solitude and primitive unconfined recreation in combination with the opportunities available on those adjacent lands. Protecting the wilderness characteristics of BLM managed public land that is contiguous to other federal lands already managed with a wilderness emphasis could improve management consistency between agencies and thus improve the protection of wilderness characteristics for the block of lands as a whole.

## **Cave Resources**

Alternative 1 provides less protection to cave resources, and could result in greater disturbance of significant cave resources than the action alternatives. Since cave management direction is lacking in existing RMPs for the plan area, caves would continue to be managed in accordance with the BLM national and Oregon/Washington Cave Management Policy. These policies would serve to protect known cave resources in general, but do not specifically restrict adjacent habitat disturbing activities.

The action alternatives provide specific management direction to identify, protect, and enhance cave resources on public lands, including development of a cave management plan for Wild Horse Point Cave. In addition, the action alternatives would limit management disturbance within 350 feet of any cave on public land, potentially restricting uses on 9 acres. Areas within 0.5 mile of any cave would be rights-of-way avoidance areas (see Lands and Realty section of this chapter). The 350-foot and 0.50-mile perimeter restrictions around any known cave under the action alternatives would reduce the potential for surface disturbance from management activities more than Alternative 1.

## **Visual Resources**

### **Introduction**

Analysis of the environmental consequences of the alternatives on visual resources considered the following key resources or resource uses: Vegetation, Fire and Fuels, Aquatic Resources, Visual Resources, Special Designations, Recreation Opportunities, Travel Management, Energy and Mineral Resources, and Lands and Realty.

Indicators used to compare environmental consequences between alternatives include: visual quality and acres of VRM Management Classes I through IV.

Except for recently acquired and previously existing contiguous public lands in the North Fork of the John Day River, the BLM used the existing VRM Inventory Classes from the Two Rivers, John Day, and Baker RMPs to determine final VRM classes for public lands across the John Day Basin plan area. The allocation of VRM classes by alternative is summarized in Table 4-10. In all the action alternatives, the VRM class meets or exceeds the inventory class.



## Visual Resource Assumptions

- All activities would conform to each VRM class, as proposed in each alternative.
- There may be short- and long-term effects to visual quality, depending on the action or activity.
- While VRM inventories may include all land jurisdictions and ownerships, BLM visual resource management decisions only apply to BLM lands.
- No actions proposed in any alternative are expected to change a VRM class due to VRM class objective constraints.

## Analysis of the Effects of the Alternatives on Visual Resources

Impacts on visual resources are primarily evaluated on a project-specific basis by evaluating the degree of change, or contrast created within a characteristic landscape. Activities that result in the most contrast and are most noticeable to the public are considered to have the greatest effect on scenic quality. Most of the effects described in this section are relative to landscape-scale potential actions. Site-specific analysis will be conducted prior to any specific project implementation. These analyses will include visual contrast evaluations as required by BLM VRM policy.

### Vegetation Management Effects on Visual Resources

Vegetation removal, forest thinning, fire-killed vegetation, and limited road construction would decrease visual quality in the short term. Surface disturbance and contrasts between treated and untreated landscapes would be less over the long term if VRM project objectives are followed as required by all action alternatives. There would continue to be a higher potential for stand-replacing wildfire in forestlands in the South Fork and North Fork John Day River and in the Rudio Mountain area under Alternative 1 compared to the other alternatives due to a lower level of proactive thinning.

Alternative 1 would result in a higher probability of adverse visual effects from uncharacteristic fire due to a smaller area of fuels treatment proposed in these areas and less emphasis on forest and woodland management, compared to all of the action alternatives. Fewer long-term benefits to visual quality in forestlands would occur, which would contribute to a higher probability that landscapes would burn with limited or no live vegetation remaining.

The action alternatives contain direction for management of differing seral structural conditions, patch sizes, and connectivity not contained in Alternative 1. These actions would, when applied across a landscape, result in a more diverse and natural appearing visual setting.

### Riparian and Aquatic Habitat Management Effects on Visual Resources

Rivers and creeks contain the most vegetative diversity of all habitat types, and flowing water enhances visual quality. Riparian and aquatic habitat actions that sustain, enhance, or protect watershed functions, fish habitat and water quality in these habitats, would also enhance visual quality. Riparian management direction contained in Alternative 1 would apply to a much smaller portion of the landscape than direction contained in the action alternatives. The ability to treat vegetation within riparian areas may result in short term visual changes but through time would increase the visual quality of these areas.

### Fuels and Fire Management Effects on Visual Resources

Alternative 1 would have less area where WUI fuels treatments would occur. These are typically some of the more aggressive vegetative treatments. Thus, the action alternatives are expected to have a greater number of acres with potential for higher visual contrast. Individual projects would still meet VRM contrast ratings. However, visual resources would be protected in the long term by reducing the amount and severity of potentially uncontrolled wildfire by reducing high fuel loads. Additionally, the ability to utilize appropriate fire management tools would also reduce the potential for stand-replacing wildfire that has a dramatic effect on visual quality. Short-term impacts of fire suppression would be higher under Alternative 1 than the action alternatives.



Short-term adverse impacts from prescribed burns would have limited effects if mitigation measures are followed. Project layout design using VRM mitigation actions could reduce short-term effects and may enhance visual quality over the long term by creating vegetative mosaics and diversity across the landscape.

Rehabilitating landscapes damaged by wildfires under any alternative would help minimize the severity of wildfire impacts on visual resources in the long term. Short-term effects may be apparent if burned landscapes are next to roads or areas seen by public land visitors. The use of fire lines and retardant would cause noticeable changes to the "natural environment" that some visitors define as a conifer, or juniper covered landscape, without regard to their ecological condition. Public evaluation and acceptance of burned landscapes is dependent to some degree on individual understanding of the role of wildfire and the influences of past management in forest ecosystems.

### **Special Designations Management Effects on Visual Resources**

The action alternatives would designate additional ACECs, a Wild and Scenic River on the North Fork (with the exception of Alternative 4), Back Country Byway, and wilderness character protection areas that do not exist in Alternative 1. Each of these areas has VRM designations designed to provide the appropriate level of visual protection. However, because of the additional sensitivities of these areas, certain developments such as wind energy development are precluded primarily due to the special designation rather than the visual resource designation. Alternative 4 would provide the greatest amount of acres with additional visual resource protection relative to wilderness character; however, it does not propose the North Fork as suitable for designation as Wild and Scenic River.

### **Visual Resources Management Effects on Visual Quality**

Retention and enhancement of visual quality on public lands would continue to be governed by BLM VRM Classes I-IV objectives. Visual quality may be enhanced or decrease, depending on VRM class; the location of public land; the size, number and type of projects developed within a landscape; and visual mitigations. Table 4-10 summarizes the area in each VRM class across the plan area by alternative. The action alternatives all have VRM designations that meet or exceed recommended visual protection levels based on visual inventory analysis. The action alternatives would designate 41,867 more acres in the North Fork of the John Day as VRM Class II than would Alternative 1. Alternative 4 would designate 4,822 acres of VRM Class II, more than the other action alternatives throughout the planning area due to additional wilderness character protection.

### **Recreation Management Effects on Visual Resources**

Under Alternative 1, visual effects would continue to increase from random OHV use, especially on public lands near residences. Alternative 1 designates 234,272 acres as Open to off-road OHV use. Alternative 1 provides the largest amount of area open to OHV use as well as the longest season of use. Off-road use during periods when soils are moist has the potential to remove vegetation and create scars on the landscape that can persist for years or even decades, depending on the location.

Under the action alternatives, about 230,000 acres would be shifted out of OHV open designation, mostly into OHV limited designation where motorized use is restricted to designated roads and trails. In these areas, development of new routes would be reduced. With fewer new routes being created in areas where motorized recreation occurs, visual quality would be retained to a greater degree under Alternatives 2-5 than under Alternative 1.

Under the action alternatives, recreation activities would have different effects on visual quality, but all activities managed within an SRMA would have less effect on visual quality due to more intense visitor management, such as limiting motorized use to designated roads and trails. Alternative 2 has more area managed under SRMAs than Alternative 1, helping avoid user-created trails that would reduce visual quality.

The construction of new recreation sites or the expansion of existing sites under Alternatives 2-5 would not impact visual qualities, if VRM project mitigation is followed. Recreation development in popular recreation use areas would be consistent with the prescribed setting character for that setting, and would reduce visual impacts of unmanaged recreation use in most cases.



Allowing cross-country OHV use in the 598-acre Golden Triangle area would create visual scarring on the landscape, but this area is small, limiting effects to visual quality in that area.

Under Alternatives 2 and 3, a 3,971-acre area on the Rudio Plateau would remain in OHV Open designation, which allows for unrestricted cross-country travel in all classes of OHV. Significant acreage elsewhere in the plan area is shifted out of OHV Open designation under Alternatives 2-5, which is expected to significantly reduce development of new user-created routes and associated visual impacts in these areas. However, it is possible that visual impacts may increase in the OHV Open area on the Rudio Plateau under Alternatives 2 and 3, if OHV designation changes elsewhere result in more intensive use of the Rudio area.

### **Energy and Mineral Resources Management Effects on Visual Resources**

Any development of mineral materials; oil, gas, and geothermal leasing; locatable minerals; and wind energy development has a high potential to change the natural character of the landscape. New structures, creation of new roads or upgrading existing roads, and project operation including delivery of resources to market would result in short- and long-term impacts on visual quality.

Alternative 1 would provide more public land acreage where energy projects would be allowed, or would be limited in a manner that retains visual character, than any of the action alternatives. The VRM project mitigation measures would reduce the significance of effects, but developments would reduce visual quality of the landscape where projects are allowed. Open designations at Little Canyon Mountain would occur in the existing pits only under the action alternatives. Both of the pits currently have high levels of bare soil with numerous OHV tracks. Open OHV activities would not change this character. Both pit locations are minimally visible, if at all, from the county road on the south and from individual residences. Effects of OHV activities are not expected to affect visual quality outside of the confines of the pits themselves for all alternatives. OHV trail creation allowed in Alternative 2, 3, and 4 would be constructed in a manner that would meet the visual standards established for this area.

### **Land Tenure, Realty, and Use Authorization Effects on Visual Resources**

Use authorizations may affect visual quality under all alternatives. New rights-of-way, leases, and permits, and road construction activities would have the potential to affect visual resources under all alternatives. Site-specific potential for additional access for power lines, pipelines, and wind and cell towers also have potential to reduce visual quality, because approval of these projects would change the landscape indefinitely.

The action alternatives provide more restrictions for rights-of-way than does Alternative 1. This would increase the potential to meet VRM designation objectives.

All alternatives allow for the construction of additional major power transmission lines within existing utility corridors only. Additional transmission lines would result in an incremental increase in the developed appearance of the landscape within existing utility corridors. Project design elements in these areas must minimize long-term visual impacts. Where transmission lines are adjacent to, or enter or cross the John Day River corridor, the lines and associated structures would be designed and located so as to minimize their visibility to river recreationists.

Acquisition of other lands to aggregate BLM public lands into more contiguous parcels through land exchanges could enhance or detract from existing visual quality of public lands, depending on the lands acquired or public lands disposed. Over the long term, land acquisition of lands to aggregate existing public land ownership patterns enhances visual quality and provides stable land uses that trend toward enhancement of visual quality on landscapes. Most public lands classified as Z-3 would not have high or sensitive visual qualities, but their natural condition may change by development, if disposed. Under Alternative 1, visual quality would continue to be maintained on public lands zoned 1 for retention. A greater number of acres may be exchanged out of public land ownership, without retention of existing visual qualities, under Alternative 1 than under any of the action alternatives 2-5 (Table 2-23).

The action alternatives designated more land as Z-1 zoned for retention; thus, these lands are more likely to remain in federal ownership where visual quality must be addressed on all projects. Specifically, visual qualities would be retained on public lands zoned Z-1 along the main stem John Day River, South and North Forks John



Day River, Dixie Creek and Little Canyon Mountain areas, Rudio Mountain and Johnson Heights, and public lands surrounding Sutton Mountain.

Lands zoned Z-3 have the highest potential to be removed from federal ownership and have subsequent development on them that could impact the natural appearance of the landscape. Although the action alternatives have a greater number of acres zoned Z-3 for disposal, they also have the largest amount of land zoned Z-1 for retention. Lands zoned Z-3 provide limited opportunities to manage for naturalness due to their small size and juxtaposition with other private lands.

Other public lands zoned Z-3 are within the vicinity of the John Day River, but it is unknown what effects could occur to visual quality if these lands were no longer public. Man-made improvements on these tracts of land visible from the river would reduce scenic quality along the main stem John Day river segment from Kimberly to Clarno river segment.

## Summary of Effects on Visual Resources

Visual effects on all public lands except in the North Fork John Day River area would differ between Alternative 1 and all of the action alternatives. The absence of proactive vegetative and fuel treatments in Alternative 1 would result in reduced visual quality in the short and long term, due to more stand-replacing wildfire events burning untreated forestlands in the South and North Fork John Day River areas and in the Rudio Mountain area. Actions in Alternatives 2-5 that shift most OHV use away from unrestricted cross-country travel to a system of designated routes would increase visual quality by reducing the extent of unplanned, user-created routes across the landscape.

Most of the planning area is classified as VRM Class II. Management actions in these areas would retain the visual character of the landscape. Changes to the landscape might be visible, but would conform to the predominant elements of form, line and color visible in the landscape and would not attract the attention of a casual observer. For example, the visual effects of fuels treatment in a forested area classified as VRM Class II would differ from the visual effects of developing an OHV route in the same area, but in either case the actions would meet VRM Class II standards. The appearance of the area might change somewhat, but observers would still perceive the area as forest.

Management actions in areas classified as VRM Class III could result in greater changes in visual appearance, but would still partially retain the visual character of the landscape. Changes resulting from management activities might attract attention, but would not dominate the view of a casual observer. Actions in VRM Class IV landscapes could result in a high level of change in visual landscape characteristics and might be a major focus of view attention, but every attempt would be made to minimize these effects through careful location, minimal disturbance, and repeating the basic visual elements.

## Cumulative Effects on Visual Resources

Population growth in central and eastern Oregon and increased development in the plan area are expected to increase public sensitivity regarding visual quality. The visual quality of open space on BLM lands provided next to communities such as John Day and other communities will increase in importance over time.

Reasonably foreseeable realty actions include several proposals for legislated land exchanges. These land exchanges generally follow the direction and objectives of the Lands and Realty Objectives with a few exceptions, such as zoning. The effects from these actions are within the effects disclosed for all alternatives.

Wind energy development is likely to continue to increase until all available areas from Condon and Grass Valley north to the Columbia River are developed. Other parts of the plan area with wind potential may be developed as well. Wind turbines currently being installed on private property measure 398 feet high and are visible for miles in all directions. Turbines and high-powered transmission lines associated with wind energy development will have a major effect on the visual resources of public and private lands. Due to the scattered nature of BLM lands in areas with high wind potential, the action alternatives would only slightly reduce the potential for visual impacts associated with wind energy development as the majority of development is expected to be on private lands, which will reduce the visual quality rating on adjacent BLM lands; however outside of the river canyon,



the majority of VRM designation is VRM Class III or IV. Sherman and Wasco counties have planning restrictions against putting wind turbines directly adjacent to the river canyon. The combination of the county ordinances and the fact that the canyon is very steep will provide protection to the visual quality experienced by visitors utilizing the river.

## Special Designations

### Wild and Scenic Rivers

Analysis of the environmental consequences of the alternatives on Wild and Scenic Rivers (WSR) considered the following key resources or resource uses: Wild and Scenic River Management, Aquatic Resources, Visual Resources, and Recreation Opportunities.

Indicators used to compare environmental consequences between alternatives are identified in Table 4-20.

### Wild and Scenic River Assumptions

- The existing 148-mile John Day River WSR segment and the 47-mile South Fork John Day WSR segment, totaling 195 miles, would continue to be managed to protect the free-flowing character of these rivers and also protect and enhance river ORVs, according to the BLM Manual 8351 and the 2001 John Day River Management Plan ROD.
- River segments found to meet eligibility criteria will receive interim protect of Outstandingly Remarkable Values until a planning decision determines suitability. A planning determination of "non-suitable" removes the interim protection.
- For eligible river segments recommended as "suitable," BLM would provide interim protection of the Outstandingly Remarkable Scenic, Recreation and Fisheries Values according to BLM Manual 8351, until Congressional action is taken to either designate the North Fork John Day River as a WSR, or release it from further Congressional review. If released by Congress, BLM would continue to protect scenery, recreation and fishery values through other management guidelines such as ACEC and VRM Class II designation and the Aquatic Conservation Strategy.
- The State Scenic Waterway designations will continue into the future.
- Current county zoning will continue to allow limited development on private land, subject to State Scenic Waterway regulations.

**Table 4-20. Comparison of Management Effects on Outstandingly Remarkable Values (ORVs) of Wild and Scenic Rivers (WSR) by Alternative (BLM public lands in WSR segment only).**

ORVs would be affected by:	Common to All Alternatives	Alternative				
		1	2	3	4	5
WSR eligible/suitable/existing	195 miles existing WSR	37 mi	37 mi	37 mi	0 mi	37 mi
WSR classification (emphasis) miles	195 miles Rec.	0 mi Rec. 0 mi Scenic	0 mi Rec. 37 mi Scenic	19 mi Rec. 18 mi Scenic	0 mi Rec. 0 mi Scenic	0 mi Rec. 37 mi Scenic
VRM direction	195 miles VRM	0 mi VRM II 37 mi VRM III	37 miles VRM II 0 miles VRM III			
New ACS direction	—	0 miles	232 miles			
Open OHV designation	—	14,817 acres	0 acres			
SRMA designation for North Fork John Day River	—	10,658 acres	10,658 acres			



- Existing ORVs will continue to be protected and enhanced through existing and proposed management and through other resource programs, laws and objectives, such as PACFISH, Aquatic Conservation Strategy, and Visual Resource Management.
- On the North Fork John Day River, the checkerboard land ownership pattern of public and private or state lands limits the ability to effectively manage river resource values for grazing and land-based recreation uses and to provide public access to public lands without trespass on private lands.
- On the North Fork John Day River, the potential for energy development is considered low, because of the rural nature of the area and distance to highways and potential energy transmission corridors and existing State Scenic Waterway classification of the North Fork John Day River as an Accessible Natural River area.
- No water development would be allowed, given the high fishery, scenery and recreation ORVs of this river and existing State Scenic Waterway classification as an Accessible Natural River Area.

### **Outstandingly Remarkable Values**

- Scenery/Visual
- Recreation Opportunities
- Fish

### **Effects Common to All Alternatives**

- Almost all riparian and aquatic resource values would continue to be inaccessible in WSR by motorized vehicle due to mixed ownership patterns, lack of public easements through private land, rugged topography, and steep or inaccessible river banks, which limit use to existing campsites and day-use areas and prevent pioneering of new user-created routes.
- No existing mining or oil and gas leases are located in these river canyons. Limiting future potential energy and mineral development to no surface occupancy within the river corridors of the John Day, South and North Forks of the John Day River would result in no effect to existing WSR ORVs and the ORVs of the North Fork John Day River.
- Development of recreation facilities would be allowed on public lands but would be required to comply with State Scenic Waterway regulations, which allows development only if screened by topography and/or vegetation.

### **Visual Resource, Wild and Scenic River, and Resource Use Effects on Wild and Scenic Rivers**

Under the action alternatives, the WSR Eligibility determination would provide adequate protection to the North Fork John Day River's free-flowing character and its ORVs. Protective management to the fishery, scenery and recreation ORVs of the North Fork John Day River would provide adequate protection of these values, subject to valid existing rights. Management activities and authorized uses would not be allowed to adversely affect either eligibility or tentative classifications.

### **Visual Effects on Wild and Scenic Rivers**

Under Alternative 1, VRM classes for public lands in the plan area would continue to provide protection of scenic ORVs on public lands within existing designated WSRs.

The scenery ORV would receive additional protection and enhancement through existing State Scenic Waterway scenic regulations limiting or prohibiting activities that reduce scenic quality on public and private lands within 0.25 mile on each side of a state-designated waterway. Protection of scenic quality under State Scenic Waterway regulations would continue on the main stem John Day River and the North Fork and South Fork John Day Rivers, which are State Scenic Waterways. Under Alternatives 2 and 5, potential Congressional designation of the North Fork John Day River as part of the national Wild and Scenic River system (with a potential classification as scenic) would provide a level of protection to the scenery and fisheries outstandingly remarkable values in addition to the protection already provided under the State Scenic Waterway classification as Accessible Natural River Area, and by the riparian strategy and the Endangered Species Act. The scenic ORVs of all existing Wild



and Scenic Rivers would continue to benefit from existing VRM Class II management on public lands next to 195 miles of WSR on the main stem John Day River and the South Fork John Day River. The Scenery ORV of the North Fork John Day River would be protected and enhanced and would benefit more under the action alternatives than the No Action Alternative due to their higher retention of natural landscapes on public lands within this 37-mile river segment. This enhancement is due to VRM Class II management objectives requiring that any changes in any of the basic elements (form, line, color, texture) caused by a management activity not be evident in the characteristic landscape.

Alternatives 2 and 5 would be the most consistent of the alternatives with the existing State Scenic Waterway classification of this segment of the North Fork as an Accessible Natural River Area. Under State Scenic Waterway regulations, the emphasis of this state river classification is to retain existing visual quality while allowing roaded access.

Under Alternative 3, the effects of other activities on Wild and Scenic Outstandingly Remarkable Scenery values would be the same as Alternative 2, with the following exception. If designated as a Wild and Scenic river under this alternative, the recreational classification on public lands from Camas Creek to Mallory Creek would be managed similar to the Scenic classification for this river segment under Alternative 2, but this alternative would provide more flexibility in how all public uses are managed and allow a higher level of recreation development than Alternative 2. For example, recreation development such as campsites, campgrounds and day-use areas may be more apparent and not blend into the landscape as well as these developments would under Alternative 2, with a Scenic classification.

Alternative 4 would provide much of the same protections of visual ORVs as the other action alternatives due to the existing protections already provided by the State Scenic Waterway designation of the North Fork as an Accessible Natural River Area and the VRM II allocation. However, no federal interim protection of the scenic values associated with a suitability recommendation would occur.

The effects of Alternative 5 would be the same as Alternative 2.

## **Recreation Opportunities Effects on Wild and Scenic Rivers**

Under Alternative 1, existing recreation ORVs would continue to be protected by existing federal and State Scenic Waterway regulations.

Recreation ORVs would be protected through federal and state regulations providing protection of scenic quality, maintaining a scenic river canyon area for recreation activities such as rafting, fishing, and camping to occur.

Under Alternative 2, opportunities for increasing public awareness of the river ORVs and developing partnerships with adjacent landowners to protect and enhance the river ORVs would be enhanced if this river was designated as a Wild and Scenic River. The OHV limitations restricting motorized use to designated roads and trails would help protect scenic and fisheries ORVs by limiting motorized use to designated roads and trails. The recreation ORV would be protected and enhanced by managing OHV use to allow short- and long-term recreation use within this river corridor.

Designation of the North Fork John Day River as an SRMA would help increase funding to manage recreation use, while protecting and enhancing recreation ORVs.

Under Alternative 3, the effects of other activities on Wild and Scenic Outstandingly Remarkable Recreation values would be the same as Alternative 2, with the following exception. If designated as a Wild and Scenic River under this alternative, the recreational classification on public lands from Camas Creek to Mallory Creek would be managed similar to the Scenic classification for this river segment under Alternative 2, but this alternative would provide more flexibility in how all public uses are managed and allow a higher level of recreation development than Alternative 2.



Under Alternative 4, the effects of not recommending the 37-mile river segment of the North Fork John Day River eligible river as suitable for potential designation by Congress would result in not securing a guarantee of free-flowing character of the North Fork John Day River, provided as part of a federal Wild and Scenic River designation.

No federal interim protection of the recreation ORVs would occur. The existing protections already provided by the State Scenic Waterway designation of the North Fork as an Accessible Natural River Area, PACFISH, and ICBMP management guidelines would continue to provide a lower level of protection of river ORV values of the North Fork John Day River than provided under Alternatives 2, 3, and 5. Designation of VRM Class II on public lands within the North Fork John Day River would also have the same effects to the river ORVs as Alternatives 2 and 5. Limiting motorized use to designated roads and trails and designation of the North Fork John Day River as an SRMA would also have the same effects as Alternatives 2 and 5.

The effects of Alternative 5 would be the same as Alternative 2.

### **Fishery Effects on Wild and Scenic Rivers**

Under Alternative 1, existing fishery ORVs would continue to be protected by existing federal and State Scenic Waterway regulations. The Fishery ORV would continue to be protected through existing PACFISH and water quality regulations. The free-flowing character of the North Fork John Day River would not receive additional federal protection through WSR designation. However, other federal regulations (such as PACFISH), the Oregon State Scenic Waterway, and regulations of the ODFW and DEQ would help protect the free-flowing character of the North Fork John Day River.

Under Alternative 2, the Aquatic Conservation Strategy would provide additional protection to the fisheries and scenic ORVs over Alternative 1, by ensuring uses do not affect riparian and aquatic resources, through aquatic and riparian BMPs. If designated by Congress as a WSR, another important effect of recommending the North Fork John Day River eligible river as suitable for potential designation by Congress would result in securing a guarantee of free-flowing character of the North Fork John Day River, in perpetuity, as provided through federal Wild and Scenic River designation. The OHV limitations restricting motorized use to designated roads and trails would help protect fisheries ORVs by limiting motorized use to designated roads and trails. Designation of the North Fork John Day River as an SRMA would help increase funding to manage recreation use, while protecting and enhancing recreation, scenery, and fishery ORVs.

Under Alternative 3, the effects of other activities on Wild and Scenic Outstandingly Remarkable Fisheries values would be the same as Alternative 2.

Under Alternative 4, the effects of not recommending the 37-mile river segment of the North Fork John Day River eligible river as suitable for potential designation by Congress would result in not securing a guarantee of free-flowing character of the North Fork John Day River, provided as part of a federal Wild and Scenic River designation. No federal interim protection of the fishery ORVs would occur. The existing protections already provided by the State Scenic Waterway designation of the North Fork as an Accessible Natural River Area, PACFISH and ICBMP management guidelines would continue to provide a lower level of protection of river ORVs of the North Fork John Day River than provided under Alternatives 2, 3, and 5. The effect of Alternative 5 would be the same as Alternative 2.

### **Summary of Alternative Management Effects on Wild and Scenic Rivers**

Under Alternative 1, the North Fork John Day River would not be managed under BLM Manual 8351 to protect the identified ORVs. Existing BLM management would provide a lower level of protection of fishery, scenery, and recreation ORVs than Alternatives 2, 3, and 5.

Under Alternative 4, the North Fork John Day River would not be protected by BLM WSR interim management regulations—BLM Manual 8351. River ORVs would receive a lower level of protection through existing protections; however, there would be no guarantee of protection of free-flowing river character under this alternative.



## Cumulative Effects on Wild and Scenic Rivers

Potential negative impacts to scenic, recreation, and fisheries outstandingly remarkable values have resulted from past human activities such as logging, road development for timber and commerce through eastern Oregon, livestock grazing year round in riparian and upland areas, community development, and dams on some tributaries in the John Day River Basin. Prior to acquisition by the BLM, the majority of lands along the North Fork John Day River were logged, resulting in logging activities being visible upslope along both sides of the river.

These actions have had an effect on the ORVs of existing WSRs and also an effect on the ORVs of the North Fork John Day River. Current and expected future WSR management of ORVs in designated WSR segments of the John Day River and South Fork John Day River will continue to protect and enhance these ORVs by implementing management plan actions focused on the protection and enhancement of ORVs along these rivers.

Current and future protection of existing ORVs on the North Fork John Day River are expected to continue through proposed VRM Class II objectives for the river canyon, Aquatic Conservation Strategy, and the limiting of motorized use to designated roads and trails, which when combined, provide a higher level of protection than exists under the existing situation. State Scenic Waterway Accessible Natural River Area regulations will also continue to protect ORVs of the North Fork John Day River.

Although visitor use is expected to increase over the long term on all existing Wild and Scenic Rivers, the federal Wild and Scenic River designation would continue to provide the guarantee of short- and long-term, free-flowing water, free of water impoundment. Increased public awareness and an added layer of protection and partnership opportunities with adjacent landowners and user groups would occur with Wild and Scenic River designation. Additional funding may also result from WSR designation. These benefits would be expected to also occur on public lands along the North Fork John Day River, if Congressional action resulted in WSR designation for this waterway.

## Wilderness and Wilderness Study Areas

### Introduction

Under all alternatives, the BLM will manage Spring Basin Wilderness according to the Wilderness Act, BLM Wilderness regulations at 43 CFR 6300, the BLM's National Wilderness Management Policy, and specific provisions of the enabling legislation in the Omnibus Public Land Management Act of 2009 (Public Law 111-11), which ensure that management actions preserve or enhance the wilderness character of the area.

Analysis of the environmental consequences of the alternatives on Wilderness Study Areas considered the following key resources or resource uses: Fire and Fuels, Wildlife, Special Designations (WSAs, ACEC/RNA, and Back Country Byways), Livestock Grazing, Recreation Opportunities, and Travel Management.

Indicators used to compare environmental consequences between alternatives include: degree of protection of WSA values.

### Wilderness Study Area Assumptions

- Managing Wilderness Study Areas according to the Interim Management Policy for Lands Under Wilderness Review (BLM 1995), including regular WSA monitoring and work to deter, detect, report and rehabilitate any damage or impairment to WSAs, would maintain their suitability for designation.
- Projects proposed within a WSA such as prescribed fire (including fire to achieve resource objectives), riparian and wildlife habitat improvements, noxious weed control, wild horse management, and grazing improvements require a site-specific NEPA analysis in accordance with the IMP and must meet the "non-impairment criteria" in order to proceed.
- The Interim Management Policy provides specific guidance for managing most uses in WSAs, including commercial permits, OHV use, motorized vehicle use, livestock grazing, energy and mineral uses, and land use authorizations.

The following resources or resource uses would have no effect on Wilderness Study Areas: Soils, Air Quality, Vegetation, Aquatic Resources, Vegetation (special status plants and noxious weeds), Wild Horses, Lands with



Wilderness Characteristics, Cave Resources, Visual Resources, Special Designations (wild and scenic rivers and wilderness), Native American Uses, Paleontological Resources, Cultural Resources, Recreation Opportunities (facilities), Energy and Mineral Resources (leasable, locatable, and salable minerals), Lands and Realty (land tenure), Use Authorizations, and Agricultural Land Management.

## **Analysis of the Effects of the Alternatives on Wilderness Study Areas**

### ***Fire and Fuels Management Effects on Wilderness Study Areas***

Fire to achieve resource objectives and prescribed fire under the action alternatives may better improve ecosystem health in some WSAs than under Alternative 1. In accordance with the Interim Management Policy, mechanical juniper treatments are not permitted.

Managing fire within the full array of appropriate responses would meet the WSA objective of allowing fire to play a natural role whenever possible. Wildland fire is an important tool for improving ecosystem health within WSAs where mechanized tools are not an option. When managing fire in a WSA, minimum impact management tactics would be used and a Resource Advisor would be present during a wildfire to bring forward any concerns specific to the WSA.

### ***Wildlife Management Effects on Wilderness Study Areas***

Greater seasonal area closures for motorized vehicles under Alternatives 2-5 would close most existing motorized routes within WSAs during the winter season. There are currently few routes open to motorized use in WSAs, and some of these routes are already closed during the winter season to protect soils and road surfaces during muddy conditions. Current winter use of these routes is minimal, and some of the winter activities are illegal in nature, including unauthorized wood cutting and unauthorized cross-country vehicle use associated with horn hunting. Closing most of the remaining routes to motorized use under the action alternatives during winter months may help cut down on illegal activities, but would also close motorized access to legal users, requiring all users to travel within the WSAs by foot, horse, or boat during the winter season.

### ***Wilderness Study Area Management Effects on Wilderness Study Areas***

In all alternatives, WSAs would be managed in accordance with the Interim Management Policy to maintain their suitability for Wilderness designation by Congress. In addition, improving access to public information about WSAs and their management through various media including the BLM website will help visitors and neighbors understand which activities and uses are allowable in WSAs, hopefully resulting in decreased violations associated with unauthorized wood cutting and OHV use. The information will allow the public to identify WSA locations and boundaries, locate designated motorized vehicle routes on a map, plan ahead for a visit, know the regulations in advance, and contact the BLM with questions or to report a violation.

Establishing partnerships to assist the BLM with monitoring work would increase field monitoring presence, which is key to understanding where and how violations such as wood cutting and OHV use are taking place so they can be deterred and prevented. Informing the public about violations and seeking volunteers to assist with reclamation would help increase awareness of these management problems and challenge the public to become involved in solutions.

Inserting relevant IMP requirements (where applicable) into grazing lease agreements and recreation permit stipulations would clarify requirements for operating within a WSA, helping to reduce confusion and improve compliance.

Establishing partnerships to assist the BLM with monitoring work would increase field monitoring presence, which is key to understanding where and how violations are taking place so they can be deterred and prevented. Informing the public about violations and seeking volunteers to assist with reclamation would help increase awareness of these management problems and challenge the public to become involved in solutions.

### ***Contingent Allocations***

If Congress releases a Wilderness Study Area from further consideration as wilderness, these lands would no longer be managed according to the Interim Management Plan, but instead according to contingent allocations



specific to each Wilderness Study Area. For lands released from WSA status, changing the VRM Class from a VRM Class I to a VRM Class II would slightly reduce protections to the visual resources of these lands. Limited mechanical treatments to reduce juniper encroachment could be conducted on these lands.

Designating the lands within the existing North Pole Ridge, Thirtymile, and Lower John Day WSAs as the Lower John Day ACEC would protect the natural scenic values and primitive recreation opportunities associated with these lands.

Under the action alternatives, managing the lands within the existing Sutton Mountain WSA under the management proposed for the John Day Paleontology ACEC (see John Day Paleontology ACEC Alternatives in Chapter 2), and continuing to manage these lands under no-surface-occupancy requirements for oil and gas development and closed to wind energy development would better protect the natural scenic value of these lands. Continuing to limit motorized vehicle use to signed designated routes except for administrative use would help to maintain the primitive recreation setting and non-motorized travel emphasis identified for this portion of the Bridge Creek SRMA.

Under the action alternatives, managing the lands within the existing Pat's Cabin WSA under no-surface occupancy requirements for oil and gas development and closed to wind energy development would better protect the natural scenic value of these lands than under Alternative 1. Continuing to close these lands to motorized vehicle use except for administrative use would protect the highly erosive soils in this area and help maintain the primitive recreation setting and non-motorized travel emphasis identified for this portion of the Bridge Creek SRMA.

Under the action alternatives, managing the lands within the existing Aldrich Mountain WSA under no-surface occupancy requirements for oil and gas development and closed to wind energy development would better protect the natural scenic value of these lands than under Alternative 1. Continuing to limit motorized vehicle use to signed designated routes except for administrative use would help slow the spread of noxious weeds and maintain the primitive recreation setting and non-motorized travel emphasis identified for this portion of the South Fork SRMA.

Under the action alternatives, managing the lands within the existing Strawberry Mountain WSA as closed to motorized vehicle use, except for administrative use, would help protect the adjacent USFS Wilderness Area from motorized vehicle intrusions.

### ***ACEC/RNA Management Effects on Wilderness Study Areas***

Designating the 6,639-acre Black Canyon ACEC/RNA to be managed as a Research Natural Area (RNA) inside the existing Sutton Mountain WSA for the purpose of protecting native plant communities under the action alternatives would help to protect the special plant features identified for this WSA. The IMP takes precedence over ACEC/RNA direction unless the other management direction is more restrictive and protective than the IMP, in which case the more restrictive management would be followed. Under ACEC/RNA direction, livestock grazing would not be permitted within the RNA to protect the native plant communities for which the RNA is proposed.

Designating the John Day Paleontology ACEC that overlaps the Sutton Mountain WSA for the purpose of protecting paleontological resources would better protect the special paleontological features identified for this WSA under Alternatives 2-5 than Alternative 1. The primary reason for the ACEC is to ensure that these lands are recognized as containing significant paleontological resources and conserved for research and interpretation into the future as important components of a broader scientific and management approach that the BLM shares with the John Day Fossil Beds National Monument. The IMP takes precedence over ACEC/RNA direction unless the other management direction is more restrictive and protective than the IMP, in which case the more restrictive management would be followed.

### ***Contingent Designations***

Under the action alternatives, if Sutton Mountain WSA were released from consideration for wilderness by Congress, managing the Black Canyon ACEC/RNA and the John Day Paleontology ACEC according to the ACEC/RNA standards instead of the IMP would continue to offer protection for the natural scenic values of these



lands. Alternative 1 would not offer this level of management. The BLM would consider fencing and signing the perimeter of the RNA.

Under the action alternatives, if the North Pole Ridge, Thirtymile, or Lower John Day WSA were released from consideration for wilderness by Congress, designating these lands as the Lower John Day ACEC and managing them according to the ACEC/RNA and VRM Class II standards would continue to offer protection for the natural scenic values of these lands. Alternative 1 would not offer this level of management.

### ***Back Country Byways Effects on Wilderness Study Areas***

Under Alternatives 2-5, designating the Sutton Mountain BLM Back Country Byway or Scenic Byway would attract more visitors to the Sutton Mountain and Pat's Cabin WSAs, increasing the need for visitor information, Leave No Trace education, and WSA patrols to maintain wilderness values.

### ***Livestock Grazing Management Effects on Wilderness Study Areas***

In all alternatives, livestock grazing in WSAs may continue at the same level (number, kind, and class of livestock) as existed at the time of passage of FLPMA in 1976. Changes in livestock type or season of use and projects proposed within a WSA will be analyzed in a site-specific NEPA analysis and meet the requirements of the Interim Management Policy.

### ***Recreation Management Effects on Wilderness Study Areas***

#### ***Special Recreation Management Area***

Existing management goals identified for the John Day River SRMA to be continued in Alternative 1, plus management goals identified for additional SRMAs in Alternatives 2-5, including recreation management zones, would be consistent with the Interim Management Plan and the desired recreation setting for Wilderness Study Areas.

#### ***Recreation Permits***

Continuing the existing moratorium on new upland commercial permits in Alternative 1 would have no effect on WSAs. Discontinuing the moratorium in Alternatives 2-5 may increase the availability of new annual upland commercial permits in some WSAs, pending the results of site-specific NEPA analyses.

## **Native American Uses**

Under all alternatives, avoidance of traditional use sites that are identified by a recognized tribal government within the plan area would be the preferred and most common method to eliminate or reduce adverse impacts. However, if avoidance would not be possible, other impact reduction measures would be developed in consultation with the tribal government having an identified interest. Examples of such measures include timing the management action to occur during a period when traditional users are not present on the site, or timing the action to enhance a resource for future use, and permitting use of an alternative location acceptable to traditional users. In those instances when tribal governments would not be able to provide traditional use site locations in advance of projects, it would not be possible to take measures to protect a known resource of concern, because some impacts could occur at those locations and others unknown to BLM.

## **Paleontological Resources**

Indicators used to compare environmental consequences between alternatives include: paleontological resource localities, which are the basic unit of analysis for the purposes of fossil resource management.

**Paleontological Assumptions:** Paleontology resource localities would be located as a result of predisturbance inventories. The amount of damage to paleontology localities would vary little between all the alternatives. Under all alternatives, less than 1% of localities would be damaged per decade across the plan area.



Nearly all impacts to paleontological localities would be reduced or eliminated under all alternatives through the practice of pre-disturbance locality discovery methods over planned or permitted project areas and the application of avoidance or other protection measures on identified localities. However, locality avoidance would not always be possible which would result in incidental or inadvertent loss of localities or locality information. Examples include:

- Localities that cannot be entirely avoided by project redesign without eliminating the resource benefits provided by the project.
- Projects that cannot be relocated or redesigned. For example, a ridge saddle may be the only economic and engineering feasible location for an access road.
- Projects where the locality is not visible on the surface and remains unknown.

Localities are not evenly distributed across the landscape or across landforms. Although there are exceptions, most paleontology localities occur throughout the middle and upper stretches of the river basin (see Paleontology Resources, Chapter 3). There are 155 recorded paleontological localities within the planning unit.

Any ground-disturbing action, which includes timber harvest, fire and fuels management, recreation management, grazing and off-highway vehicle use, could damage or destroy paleontology resources (see the Paleontology Resources section of Chapter 3). Effects include:

- For road construction, no localities were reported damaged in the plan area so the damage rate is 0%.
- For fires and fuels management, no localities were reported damaged in the last 12 years per 12,700 treated acres annually on average in the plan area. Fire damage to fossil localities would be rare as most localities have no vegetation. Suppression activities related to wildfires have the potential to impact some localities, especially in vegetatively barren exposures that are used as fire line anchor points or safety zones.
- For recreation site development and use, no localities were reported damaged from implemented projects. However, it is assumed that locality damage would occasionally occur if recreation sites are placed near paleontological localities.
- Off-highway vehicle use that occurs on existing and designated roads does not directly impact paleontological localities. Use that occurs outside of existing and designated roads would damage paleontological localities. One recorded locality has been damaged as a result of off-highway or motor vehicle use outside of existing and designated roads.

Under the No Action Alternative, paleontological practices would be guided by existing laws and guidance. However, fuels/fire treatment acres would likely be reduced over time as large-scale treatments become less common. The reduction in large-scale projects would be due to the fact that large-scale areas were treated in the past and there would be fewer areas of such size available for such actions. Ground-disturbing hazardous fuels treatments would average 3,600 acres annually, for a total of 108,000 acres over the next 30 years. No paleontological localities have been damaged as a result of implemented fuel/fire treatments under existing management to date.

Under the No Action Alternative, damage to paleontological localities due to implemented road construction, recreational site development and use, and off-highway vehicle use would be minimal.

Under the action alternatives, paleontological practices would be the same as Alternative 1. Continued BLM support of the interagency agreement with the John Day Fossil Beds National Monument provides the BLM with professional and technical assistance, as needed, for the majority of fossil resources in the plan area and the best available information for landscape and site-specific planning decisions related to paleontological resources.

Continuing this relationship would be a continuation of existing practice within the plan area that is not specifically authorized by the existing RMP. The management of paleontological resources under the action alternatives makes an existing practice a land use plan decision.

Under all of the action alternatives, fuels and fire treatments would be conducted on an average of 5,900 acres annually and a total average figure of 177,000 acres for the next 30 years. If no localities were damaged as a result



of 12,700 acres treated annually over the past 12 years (a total of 152,409 acres) then we can assume that over the next 30 years, pre-disturbance surveys would continue to prevent effects on paleontological resources.

Under all alternatives, damage to paleontological localities due to implemented road construction, recreation site development and use, grazing development, and off-highway vehicle use on designated roads and trails would be minimal.

The John Day Basin Paleontology ACEC is proposed under the action alternatives (2-5). The proposed ACEC has limited restrictions due to the conflict between identifying the specific locations for planning purposes and the confidential nature of the locations. Most if not all potential impacts to the specific ACEC units can be dealt with through existing reviews and processes. The primary reason for the ACEC is to ensure that the selected ACEC units are recognized as significant and conserved for research and interpretation into the future as important components of a broader scientific and management approach that the BLM shares with the John Day Fossil Beds National Monument.

## Cumulative Effects

In the case of the planning area, much of the paleontological record occurs on public land. Through an interagency agreement, the BLM and National Park Service work cooperatively to identify and understand the distribution of fossil through the various geologic rock layers exposed on their respective lands. Private land fossils are incorporated when willing owners allow it. The cumulative effects of actions on private land have a limited impact on the management of fossil resources in the planning area.

## Cultural Resources

### Introduction

Indicators used to compare environmental consequences between alternatives include: isolates and sites (cultural properties consist of isolates and sites. Sites are the basic unit of analysis for the purposes of Section 106 of the NHPA [1966, as amended]).

**Cultural Resource Assumptions:** Cultural resource sites would be located as a result of predisturbance inventories. The amount of damage to cultural sites would vary little between all the alternatives. Under all alternatives, less than 1% of sites would be damaged per decade across the plan area.

### Effects of Alternatives on Cultural Resources

Nearly all impacts to cultural sites would be reduced or eliminated under all alternatives through the practice of pre-disturbance site discovery methods over planned or permitted project areas and the application of avoidance or other protection measures on identified sites. However, site avoidance would not always be possible which would result in some incidental or inadvertent loss of sites or site values. Examples include:

- Sites that cannot be entirely avoided by project redesign without eliminating the resource benefits provided by the project.
- Projects that cannot be relocated or redesigned. For example, a ridge saddle may be the only economic and engineering feasible location for an access road.
- Sites where the values are dependent on the visual setting.
- Sites that are not fully identified prior to ground disturbing actions due to lack of surface manifestations or reduced surface visibility. For example, some sites are partially or entirely below the ground surface or surface artifacts are not visible during inventory due to dense ground vegetation and thick duff cover.
- Sites are not evenly distributed across the landscape or across landforms. As stated in Chapter 3, the majority of BLM land in the plan area occurs within the John Day River canyon where there exists a relatively narrow riparian zone and floodplain and steep to moderately sloping canyon walls. A smaller



portion of BLM lands in the planning unit exhibits upland topography (see Chapter 3, Map 17, and Table 3-1).

Data is available for 11 of the last 17 years (1990-2007) for the Prineville District including acres inventoried at the Class III (intensive) level, the number of newly discovered and recorded sites, and the number of sites damaged by implemented projects. The data is not totally specific to the planning unit only. However, district findings apply to the plan area and the number of sites that will be found in the future per acre inventoried and the number of sites damaged per project disturbed acre can be projected, as well as the correlations between site characteristics and environmental attributes, using the OHIMS database (below).

First, a total of 74,244 acres of Class III survey was completed for the District in the 11 years for which data is available. The number of acres inventoried for each year is unevenly distributed. Class III survey occurred in the other six years as well, so the total number of acres surveyed over the 17 years in the district is greater than 74,244. The total number of acres surveyed in the plan area, however, is estimated to be one-third again as small (roughly 50,000 acres).

Second, the number of sites recorded for the district for those 11 years is 803 sites. Again, the number of recorded sites would be higher if the figures were included for the missing years. The number of newly recorded sites each year is uneven. Currently, there are 439 sites recorded in the John Day basin. Not all, but most, of those sites were recorded in the period of time under consideration. Over the 11 years for which there is specific data, however, only one site was reported being damaged from an implemented project.

Any ground-disturbing action that includes timber harvest, fire and fuels management, recreation management, grazing and off-highway vehicle use could damage or destroy cultural resources (see the Cultural Resources section of Chapter 3). In summary:

- For road construction, no sites were reported damaged in the plan area so the damage rate is 0%.
- For fires and fuels management, only one site (0.23%) was reported damaged in the last 12 years per 12,700 treated acres annually on average in the plan area. Damage to one site does not provide enough data to develop a meaningful correlation between the number of acres treated and the risk of damaging cultural sites. However, it is assumed that damage to archaeological sites would occur occasionally. Fuel treatments also reduce the risk of wildfires damaging sites. While fuel treatments would reduce the risk of wildfires damaging sites, there is no quantified data on risk reduction.
- For recreation site development and use, no sites were reported damaged from implemented projects. However, it is assumed that site damage would occasionally occur.
- Off-highway vehicle use that occurs on existing and designated roads does not impact archaeology sites. Use that occurs outside of existing and designated roads could damage sites. No sites have been reported damaged by off-highway vehicle use within the plan area.

Under the No Action Alternative, archaeological practices will be guided by existing laws and guidance. Under this alternative (Alternative 1), fuels and fire treatment acres would likely be reduced over time as broad-scale treatments become less common. The reduction in broad-scale projects would be due to the fact that broad-scale areas were treated in the past and there would be fewer areas of such size available for such actions. Ground disturbing hazardous fuels treatments would average 3,600 acres annually, and average a total of 108,000 acres over the next 30 years. If only one site was damaged as a result of 12,700 acres treated annually over the past 12 years (a total of 152,409 acres), then we can assume that over the next 30 years only one site would be damaged.

Under the No Action Alternative, damage due to implemented road construction, recreation site development and use, and off-highway vehicle use would be unlikely to occur.

Under all of the alternatives, archaeological practices would be the same as the No Action alternative plus the use of the Oregon Heritage Information Management System (OHIMS) database. Continuing support for the OHIMS database would provide for systematic storage of standardized and comparative archaeological information and provide an efficient way to retrieve that information when needed. This would provide the best available data for landscape and site-specific planning level decisions related to cultural resources, particularly



as it relates to site significance and site management categorization. Supporting the OHIMS database would be a continuation of existing practice within the plan area that is not specifically authorized by the existing RMP. The action alternatives adopt existing practice for management of cultural resources, which enables the most efficient implementation of land use plan decisions, virtually imperative for analyses across landscapes of mixed ownerships and scattered tracts, to transcend BLM land-management patterns and analyze past land uses on a watershed scale.

Under the action alternatives, fuels and fire treatments would be conducted on an average of 5,900 acres annually and a total average figure of 177,000 acres for the next 30 years. If only one site was damaged as a result of 12,700 acres treated annually over the past 12 years (a total of 152,409 acres), then we can assume that over the next 30 years no more than two sites would be damaged.

Under the action alternatives, damage to archaeological sites due to road construction, recreational site development and use, grazing development, and off-highway vehicle use on designated roads and trails would be unlikely to occur.

## Cumulative Effects

The cumulative effects on public land cultural resources from actions conducted on private land are difficult to assess. From a general standpoint, public land archaeological resources are much better understood because they are identified, recorded and mitigated during pre-project inventories, as required by law. Private land projects do not require archaeological inventories in most cases. For this reason, much of what we know about the archaeological record comes from public land resources. The adjacent National Forest has the same legal obligation as public lands and should also contribute to the base of knowledge in this area. As stated elsewhere in the document, the lands administered by the BLM occur in selective geographic areas of the planning area, producing a skewed picture of site distribution. For example, in the northern portion of the planning area, the majority of the public land consists of steep canyon walls and a narrow valley bottom. Upland areas are not well represented, which would likely have more possibility of resources.

## Livestock Grazing

### Introduction

Analysis of the environmental consequences of the alternatives on livestock grazing considered the following resources or resource uses: Vegetation (vegetation treatments, including fire management and noxious weed actions, and agricultural land management), Wildlife, Lands with Wilderness Characteristics, and Special Designations on permitted use.

Permitted use was the indicator used to compare and assess these effects. Permitted use [defined as amount of forage, expressed in animal unit months (AUMs), allocated by a land use plan for livestock grazing in an allotment under a lease] was chosen as an indicator because it is assumed to be the primary unit of value provided by this resource use that directly impacts local economies. While management actions (e.g., grazing schedules or fence construction specifications) may cause livestock operations to vary practices, such modifications are assumed to be inconveniences compared to a decrease in the value of the lease.

### Livestock Grazing Assumptions

- Vegetation treatments will require an average of two years of rest from livestock grazing following implementation. Prescribed fire treatments will also require one year of rest prior to treatment.
- Few vegetation treatments will correspond exactly to pasture or allotment boundaries requiring three times more area than the area treated to be rested from livestock grazing.
- Since forage production varies with location and vegetation treatment locations have not been specified, a basin-wide production of 15 acres per AUM was assumed for analysis purposes.



- All vegetation treatments will increase forage quantity and quality, but the additional forage would generally be allocated to wildlife. The additional forage could be allocated to livestock on a temporary non-renewable basis for which site-specific analysis would be performed.
- As agricultural lands are converted to native vegetation, the use of those lands will shift from cultivation to livestock grazing. Since forage production varies with location, for converted agricultural lands a basin-wide production of 7 acres per AUM will be assumed for analysis purposes.
- For analysis purposes only, 100% of applicable permits are assumed to be relinquished.
- In all alternatives, allotment monitoring, evaluation, and Land Health assessments (and subsequent site-specific analyses) may result in changes in forage allocation, season of livestock use, and construction of new fences, pipelines, and other range developments to meet resource goals and objectives.
- Grazing preference applications for areas with no active preference will continue to be evaluated according to direction provided in 43 CFR 4100 and, for Alternatives 3, 4 and 5, the grazing matrix.
- Reduced AUMs mean lessees must reduce herd size, lease other pasture, or decrease the amount of time they graze livestock on public land, or place more grazing pressure (more animals for longer time) on their private land.
- The Standards for Land Health provide a system to monitor and assess range conditions and make changes to the individual grazing systems, including the timing, intensity, and season of use. Since this plan does not propose changes in livestock grazing intensity or season of use and existing guidance (Standards for Land Health, Clean Water Act, others) directs the BLM to assess and change management to address problems, the ecological effects of livestock grazing are generally not reviewed in this plan.
- Objectives for the livestock grazing program management include reducing conflicts. In the Chapter 2 Livestock Grazing section, conflict is defined as the problems that tend to increase as human uses in and adjacent to grazing allotments increase. These problems include stray livestock on busy roads and private land resulting from cut fences, inadequate fence maintenance, and failure to close gates. The greater the conflict, the higher the management costs for both the lessee and the BLM, and the lower the satisfaction of the user and adjacent landowner. There is a corresponding drop in livestock operator demand for an allotment when the conflicts are high.
- Alternative 1 assumes that existing guidance would adequately solve conflicts, and that grazing lessees, adjacent private landowners, recreationists, and other public land users can make adjustments as needed to lessen or resolve conflicts. In Alternatives 2-5, the assumption is that existing guidance does not go far enough in solving conflicts, and in some areas the preferred solution is to discontinue livestock grazing.
- In Alternatives 3-5, the definition of conflict includes an ecological conflict criterion. This criterion does not replace existing guidance (e.g., Standards for Land Health), which adequately directs monitoring and assessment of ecological factors. Instead, it provides a quick estimate of the potential for ecological conflicts with livestock grazing and provides a way for BLM decision makers to integrate potential social, economic and ecological criteria when making decisions about livestock grazing use in an area.
- Effects of Alternatives 3-5 can be assessed by comparing the relative amount of acres with Low, Moderate, or High potential for conflict or demand. Models are used in this analysis to estimate which allotments have the highest potential for conflict. The estimates are then used to make decisions about where conflicts might be high enough to warrant modification or discontinuance of grazing. The models used in this analysis to estimate conflict and demand are described in detail in Chapter 2.
- The alternatives present a range of solutions for reducing conflict, some of which involve making some allotments unavailable for livestock grazing. Grazing reductions are temporary, for the life of the plan only, and would be reevaluated during the next planning cycle.
- Lessees respond to loss of public AUMs by increasing productivity on base properties, purchasing or leasing alternate pasture, buying hay and feeding on owned or leased land, or by selling all or a portion of their herd. Lessees' options are more flexible when they have a larger ratio of owned/leased pasture versus public land, when there is leasable pasture nearby and/or the lessee can easily or cheaply haul animals to new pasture, when there are few seasonal restrictions on public and private land they graze, or when they ranch as a "hobby" and can afford the increased costs of alternate pastures or feed sources.
- Actual effects will be dependent on the private business decisions made by individual lessees based on their individual circumstances. A lessees' ability to withstand AUM losses depends on his reliance on



Federal forage. Reliance is high when lessees' private land acreage is low, or their ability to haul livestock to alternate pastures is low.

- We do not know the lessees' dependence on federal forage, so we do not know how AUM losses would affect individual lessees' overall grazing operation. A high dependence would make it more likely that AUM losses would cause lessees to cease grazing altogether, perhaps even selling their private property if the only income came from livestock grazing. Lessees with low dependence on federal forage could more easily absorb AUM losses with no change to their overall grazing operation. Most forage reductions would not take place unless grazing lessees voluntarily relinquishes their permit. This is assumed to reduce effects on the individual lessee, though the impact on the local economy would be the same as if the closure were forced. A study (Rowe *et al.* 2001) in a rapidly developing area in Colorado examined the factors influencing ranchers who graze on public land to sell their base property (private land to which the grazing privileges is attached). "Since ranch land is often the primary target for subdivision, ranchers play an important role in this pattern of land use change," say the authors. A rancher's decision to sell is affected by changes in federal grazing policy, local land-use planning efforts, and development of surrounding land. Changes in zoning and development can raise property values, increase taxes, and require more frequent checks of gates, fences, and livestock. But the decision is also influenced by non-economic factors, say the authors. "Ranchers continue to ranch despite financial difficulties. They stay because of . . . sense of place, attractiveness of lifestyle, family values, and tradition."

## Livestock Grazing Management Summary

This section outlines the effects anticipated on the grazing management program for each of the alternatives. Table 4-21 "Grazing Alternatives Results" summarizes the permitted use, expressed in animal unit months (AUMs), available in the plan area for the current situation and for each alternative. The AUM figures shown for Alternatives 2-5 assume that 100% of applicable grazing leases are relinquished.

**Table 4-21. Grazing Alternatives Results (AUMs).**

Category	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Open	27,148	5,578	11,454	10,883	11,308
Close	3,268	24,838	18,962	19,533	19,108

Alternative 1 results in the largest number of acres and AUMs remaining available for livestock grazing, while Alternative 2 results in the lowest—about 80 percent less than Alternative 1. The potential contribution to local livestock sales is correspondingly greatest in Alternative 1 and least in Alternative 2.

The potential long-term effects of anticipated forage reductions on individual lessees would be lowest in Alternative 1 and highest in Alternative 2. Conflicts between livestock grazing and other uses on public and adjacent private land are less likely in Alternative 2, which has the fewest acres open to grazing. Alternatives 3, 4, and 5 are likely to have conflict levels somewhat higher than those expected for Alternative 2.

## Effects of the Alternatives on Livestock Grazing

Analyses described herein focus only on actions where there is a measurable environmental consequence. Actions for the following resources and uses would have no measurable effect on livestock grazing: Soils, Wildlife, Wild Horses, Lands with Wilderness Characteristics, Cave Resources, Visual Resources, Special Designations, Native American Uses, Paleontological Resources, Cultural Resources, Recreation Opportunities (commercial recreation uses), and Lands and Realty at the planning scale.

Actions for the following resources and uses would have no effect on livestock grazing if associated assumptions are correct:

- Air Quality—Restrictions on operations, such as prescribed fire, are assumed to have no effect on vegetation treatment size, frequency, or the amount of rest required before or after such treatment.



- Water Quantity and Quality; Fish—Meeting aquatic resources goals is assumed to be achievable through modifying grazing practices (i.e., accessibility of riparian areas to livestock, length of grazing season, stocking levels, timing of grazing) and would not require a measurable loss of permitted use.
- OHV and Travel Management—Management would not open or close public access to any range allotment and is therefore assumed to have no impact on the grazing matrix or permitted use.
- Special Designations—The potential for changes in grazing systems and seasons of use exist, but most necessary changes to livestock management have already been implemented and no major future actions would be anticipated.
- Energy and Minerals—Land allocations to energy and mineral-related activities are assumed to exclude grazing from a small enough acreage to have no measurable impact to permitted use.

## **Vegetation, Fuels, and Fire Management Effects on Livestock Grazing**

Under Alternative 1, an estimated 2,300 acres would be rested each year to prepare for a prescribed burn. In addition, 3,600 acres would begin the first of two years of rehabilitation each year. That would translate to approximately 1,900 AUMs being taken out of production each year, or 6.2% of the AUMs on public lands in the planning area. The use of prescribed fire and rehabilitation of wildfires could result in a long-term increase in forage quality and quantity after these sites recover. However, this increase would normally be allocated to improving ecosystem function and not to permanent increases in the amount of permitted use. Fire would cause a decrease in forage available for livestock use in the short term, requiring changes in livestock grazing use. Short-term impacts of emergency fire rehabilitation include grazing exclusion following the rehabilitation.

Under Alternatives 2-5, there would be 2,300 acres rested each year to prepare for a prescribed burn. However, another 4,400 acres would begin the first of two years of rehabilitation. Additionally, an estimated 1,500 acres would receive appropriate response treatment each year. That would translate to approximately 2,820 AUMs being taken out of production each year, or 9.3% of the AUMs on public land in the John Day Basin. This is 33% greater than Alternative 1.

## **Agricultural Land Management Effects on Livestock Grazing**

An estimated 700 acres of irrigated agricultural fields have been or would be converted under current management direction (Alternative 1). So far, no AUMs have been added to livestock grazing leases. However, if applications for grazing were made, the potential would exist for an additional 100 AUMs of preference to be allotted.

Under Alternatives 2-5, an estimated 1,175 acres of irrigated agricultural fields remain under production. If all this acreage were converted to native vegetation and applications for grazing all were made, the potential would exist for an additional 168 AUMs of preference to be allotted.

## **Cumulative Effects on Livestock Grazing**

Livestock grazing is historically important in the planning area both culturally and economically, although the contribution from BLM-administered public land is small relative to total cattle/calf production. In Oregon, federal permittees use agency forage for 23 percent of total feed (Frewing-Runyon 1995). Eastern Oregon permittees are less dependent on public forage; the average reliance of eastern Oregon permittees on federal forage (BLM and Forest Service) is 11 percent. While Oregon's current Statewide Planning Goals and Guidelines manage the transition of land use in the State, future declines in the private agricultural land base are forecast to continue, thereby increasing the importance of remaining federal land resources in the region. Over the next 100 years, it has been projected that total western range lands would probably decrease by 25 to 40 percent (Holechek 2001).

Authorized use has declined approximately three percent per year on BLM-managed land in the planning area over the last decade. Use on the Deschutes and Ochoco National Forests (including the Crooked River National Grassland) has declined about 2.6 percent per year since 1995 (personal communication, Byron Cheney and Don Sargent, USFS employees). Livestock grazing on surrounding National Forests has experienced increased environmental scrutiny. Many lessees hold Forest Service permits as well. The loss of permitted AUMs on Forest Service land could increase demand for BLM AUMs in some cases and reduce the demand in others. The availability of interested lessees is likely to decrease through time due to the reduction of federal AUM availability,



the potential for permit/lease buy-outs, and the purchase of many large ranches in the basin by absentee owners that are not dependent on livestock production as a sole source of income. Based on this assumption, many range improvements would not be maintained without a concerted effort by the BLM and/or partnerships that through time would make it less likely that a lessee would be able to economically utilize allotments.

## Recreation Opportunities

### Introduction

Analysis of the consequences of the alternatives on recreation opportunities considered the following key resources or resource uses: Vegetation (management), Aquatic Resources, Wildlife, Visual Resources, Special Designations, Cultural Resources, Recreation Opportunities (recreation management), Travel Management, and Energy and Minerals.

### Recreation Indicators

- **Recreation experience quality** is indicated by a recreationist's level of satisfaction with their recreation experience. Setting conditions, frequency of encounters with other recreationists, and degree of similarity or conflict with other recreationists encountered are factors that affect satisfaction. Increasing the perceived naturalness of the landscape frequently increases the quality of the recreation experience.
- **Quantity of Recreation Opportunities.** Indicators for recreation supplies include the number of settings or sites, total trail or route distance, prescribed visitor capacities at particular sites, or amount of total area or length of time available for various types of recreation. Recreation opportunities are described on a spectrum from primitive to rural using setting attributes such as remoteness, naturalness, level of recreation technology, levels of site improvements, facilities and managerial intervention, and number of encounters with other recreationists.
- **Visitor Displacement** occurs when setting conditions or changes cause visitors who might otherwise recreate in the setting to either leave temporarily or stop using it altogether. Setting changes include the presence and activities of other recreationists (e.g., crowding or dissimilar recreation activities), level of managerial intervention or site modification, effects on the setting from non-recreation uses, and other factors. Displaced visitors indicate either short or long-term loss of recreation opportunity options.

### Recreation Assumptions

- The goal of recreationists using BLM lands is to obtain satisfying experiences through recreational activities in attractive natural settings.
- BLM managers have two goals when managing recreation: (1) provide opportunities for people to obtain satisfying recreation experiences and (2) minimize the impacts of recreational use on natural resources.
- Alternatives 2–5 would help meet future demand for regional non-motorized, motorized, and river-based recreation activities and improve the quality of most visitor experiences on public lands in the plan area.
- Nationwide, OHV sales and participation in OHV recreation peaked and began to decline in 2003/4 after years of rapid increases, but OHV use remains very popular, especially in rural areas adjacent to public lands (Cordell and others 2008). Demand for OHV access in the plan area will likely remain significant, at least in the near term and especially during hunting season. Demand for non-motorized recreation (e.g., viewing and studying nature, photography, bird watching, and wildlife viewing) may gradually increase for activities popular with retiring "baby boomers."
- Demand for river-based recreation may gradually increase, especially in spring and early summer when river flows most conducive to boating coincide with warmer weather.
- Nearly all public land visitors use vehicles to get to their preferred settings. For some visitors, their vehicle is just the mode of transportation used to access their recreational settings. For others, vehicle use itself is the recreational activity.



- In Alternatives 2–5, OHV use is limited to designated routes and trails, unless otherwise noted (Executive Orders 11644 [37FR2877] and 11989).
- Public lands classified as Middle Country may have some trails designated for non-motorized use only (see Tables 2-12 and 2-25).
- Not all public land can be legally accessed by the public (i.e., Federal lands that are landlocked by private landowners without any public access routes or easements).
- To the extent possible, BLM will utilize existing interim routes and will only build new route or trail connections if necessary to provide a variety of motorized and non-motorized designated route or trail loops as part of the Transportation Management Plan (to be completed 5 years following the ROD).
- BLM would enforce the 2007 43 CFR 8343.1 – Vehicle Operation Standards (October 1, 2007 edition, p. 946) – for OHV use on public land that identify sound, spark arrestor, light, brake, and other requirements for use of OHVs on public land.
- Allowable sounds from Class I, II, or III (see glossary) OHV use on public land would be limited to the Oregon state 99 decibel (db) limit. Under Alternative 2, allowable sound emissions from individual OHVs used at Little Canyon Mountain would be limited to 96 decibels.
- Sound from OHV use may be heard at different levels by other recreationists, adjacent landowners, lessees, permittees, mining claimants, other users, or wildlife. Noise (unwanted sound) from OHV use is variable and dependent upon, but not limited to type of OHV, riding or driving style of the OHV user, time of day, wind velocity and direction, topographic and vegetative screening, elevation, aspect, temperature, and other factors.

Table 4-25 is a plan area wide summary of alternative effects on motorized and non-motorized recreation opportunities and development on all public lands except Little Canyon Mountain. Table 4-26 is a Little Canyon Mountain summary of alternative effects regarding motorized and non-motorized opportunities and development, and Table 4-27 summarizes all recreation effects in general. Effects of the alternatives on Recreation Permitting are addressed in a separate, subsequent section.

## **Analysis of the Effects of the Alternatives on Recreation Opportunities**

### **Recreation Management Effects on Recreation**

Outdoor recreation provides a wide range of benefits to individuals, social groups and society. But recreational use also impacts public lands. These impacts accumulate over time at rates that vary with different recreational activities. Without proper management, recreation use can degrade or even eliminate the qualities of public land settings upon which recreationists depend to achieve satisfying experiences. Degraded recreation settings reduce the flow of recreation benefits back to individuals, social groups and society. Thus, public land recreation managers have two primary goals: (1) to provide opportunities for people to obtain satisfying recreation experiences, and (2) to minimize the impacts of recreational use on natural resources.

Not all recreation activities have equal environmental and social effects on recreation settings, nor are they equally compatible with one another or with non-recreation resource uses and values. Thus, to achieve an optimal balance between the sometimes competing goals of recreation access and resource protection, it is necessary to account for differences among recreation activity types (Table 4-22). These differences affect relative per capita resource impacts that popular forms of wildland recreation incur in recreation settings and help guide decisions regarding where each kind of use can be accommodated, visitor capacity, amount of trail needed for a quality experience, and the level of site hardening and mitigation necessary to protect resources.

The following sections discuss how recreation management actions in the alternatives may influence the kinds, quality, amounts and distribution of recreation opportunities that would be provided within the Planning area. Tables 4-24, 4-25, and 4-26 summarize relative differences in effects of the alternatives on recreation opportunities.

Environmental effects of recreation use and mitigation actions are also addressed when these significantly influence recreation settings and opportunities. Environmental effects are important to consider even in areas that currently see light use because if use patterns change, impacts can quickly accumulate that persist for years or



Table 4-22. Comparison of Effects of Popular Ground-based Recreation Activities.\*

Factors of interest to resource managers	Recreation Activity			
	Hiking/backpacking, trail running	Horseback riding, horse-packing	Mountain biking	Motorcycle riding (off-pavement)
Weight applied to physical and biological setting (affects soil compaction potential)	Weight of hiker, +up to 60 lb pack on extended trips	Weight of rider, +pack ≈100 lbs, +horse ≈900–1,200 lbs	Weight of rider, +day pack, +bicycle ≈25–40 lbs	Weight of rider, +motorcycle ≈175–275 lbs +any extra gear or supplies
Power applied to physical and biological setting (affects soil displacement potential)	1 "human power"	1 horsepower	1 "human power"	30–60 horsepower
Estimated speed range (can affect wildlife, other recreationists, distance traveled)	2–4 mph walking/hiking ≈10 mph running	3–5 mph	5–25 mph, mostly slower uphill, can be quite fast downhill	Typically 10–30 mph Capable of 70 mph+ Varies with trail/road conditions
Daily trip length (est.)	1–10 miles	4–15 miles	10–30 miles	25–50 miles
Vehicle track width Trail tread width (min.)	12–24 inches	18–36 inches	≈4 inches 18–24 inches	≈48 inches 50–60 inches (one-way trails)
Interface with, and effects on physical and biological setting	2 lug sole hiking boots, may use 1–2 trekking poles. Footfalls, pole tip placements	4 horse hooves, can apply locally heavy impacts and pressure to trail substrate	2 tires ≈3" wide, ≈4" track, roll across terrain. Can lose traction/skid under power or braking, especially on slopes or in corners	4 tires 7–12" wide, ≈48" track, roll across terrain. Can lose traction/skid under power or braking, especially on slopes or in corners
Emissions and waste products	Human waste if not managed properly. Potential for litter/garbage/fire rings	Human waste if not managed properly. Potential for litter/garbage/fire rings Horse dung and urine	Human waste if not managed properly. Potential for litter/garbage/fire rings	Human waste if not managed properly. Potential for litter/garbage/fire rings Exhaust gases (CO, CO <sub>2</sub> , NOX), potential for spilled or leaked fuel and lubricants Motor sounds

\* These factors affect relative per capita resource impacts that popular forms of wildland recreation incur in recreation settings. These factors also help guide decisions regarding where each kind of use can be accommodated, visitor capacity, amount of trail needed for a quality experience, and the level of site hardening and mitigation necessary to protect resources.



even decades (Ouren *et al.* 2007). The environmental effects of different recreation activities ultimately impact the quality, types, and amount of recreation opportunities that the BLM is able to provide.

### **Recreation Conflict**

Conflict could occur between recreationists if the behavior or activities of one interfere with the goal of another to achieve a satisfying recreation experience (Manning 1999). One outcome of conflict is displacement, which occurs when visitors who might otherwise recreate in an area either leave temporarily or stop using it altogether. Conflicts that occur between non-motorized and motorized recreationists can often be attributed to noise and other characteristics of OHV use such as vehicle speed or resource impacts. Even if OHVs are not present, past OHV use could cause conflict with non-motorized recreation use. This is from vegetation loss and erosion that degrades settings, which impacts scenic qualities and ecological values.

Most types of recreation uses are relatively dispersed across the planning area, and overall use levels are fairly moderate, with exceptions in some areas and at certain times of year. The off-highway vehicle use peaks during the hunting season. Recreation use is somewhat more concentrated in the North Fork, South Fork, and main stem of the John Day River and adjacent uplands. Recreation conflicts may not always be reported to agency staff and displacement of visitors due to conflict can be difficult to detect or monitor. But conflicts between motorized and non-motorized users are known to occur in big game hunting areas such as the North Fork John Day River and also in the South Fork John Day River, Little Canyon Mountain, Rudio Mountain, and Dixie Creek areas. As recreation use overall increases across the planning area, instances of conflict and visitor displacement could also be expected to increase.

Conflicts would occur under all alternatives, but would be reduced under Alternatives 2-5 through better differentiation of settings and improved management of different activity types. Existing or potential conflicts between motorized and non-motorized recreationists would be mitigated primarily by zoning, or separating the two kinds of activities. Non-motorized recreationists usually have relatively low impacts on motorized recreationists so, as a rule, non-motorized activities are allowed in motorized recreation areas. However, non-motorized recreationists may avoid areas where significant motorized use occurs. Conflicts between motorized and non-motorized recreationists on the Rudio Plateau would be lowest under Alternatives 4 and 5, which do not allow cross-country OHV travel there, but these alternatives would also impact motorized recreationists the most by leaving them without any extensive open areas over which to drive their vehicles.

Conflict could also occur between recreationists and non-recreation resource uses such as livestock grazing, timber harvesting, or energy development. These activities can degrade recreation setting and experience quality, displace recreationists from areas they might otherwise use, and reduce the total amount of available recreation opportunities. The level of potential conflict between recreation and non-recreation uses varies with recreation activity, the kind and intensity of resource use, and the characteristics and tolerance of individual recreationists.

There also could be conflict when recreationists cross public land boundaries and trespass onto private lands. Fewer conflicts and trespass are expected to occur under Alternatives 2-5 than Alternative 1, due to OHV use restrictions that limit motorized use primarily to designated routes and trails on BLM lands or lands for which BLM has obtained a right-of-way for this use.

Conflict can also occur when recreation use on public land impacts adjacent private landowners, even though physical trespass may not be occurring, such as when OHV noise emanates from public land onto private. Conflicts of this type associated with OHV use at the "Pit" areas on Little Canyon Mountain have occurred in the past, and are addressed differently under each action alternative. Off-highway vehicle use has occurred on BLM lands in the Little Canyon Mountain area for an extended period of time, during which housing has continued to be developed on adjacent private lands. Alternative 5 would reduce conflict between OHV users and adjacent landowners at Little Canyon Mountain the most by precluding all OHV use in the "Pit" areas. But this would also impact OHV users the most by displacing them from a place they have been accustomed to using for some time. Compared to Alternatives 1 and 5, Alternatives 2, 3, and 4 represent a range of intermediate actions to balance the preferences of adjacent private landowners with the preferences of public land OHV recreationists at Little Canyon Mountain.



Under all alternatives, the chances for conflict would be greatest during weekends, holidays and hunting seasons. Alternative 1 does not offer conflict resolution criteria. Alternatives 2-5 use Benefits-based Recreation Criteria (Table 2-10) and other guidelines to reduce user conflict.

### ***Special and Extensive Recreation Management Areas***

An SRMA designation intensifies management of BLM land areas where recreation is a high priority. It helps direct recreation program funding and personnel toward areas with high resource values, significant amounts of recreational activity, or elevated public concern. Areas with an SRMA can be expected to see investments in recreation facilities and visitor services aimed at reducing resource damage, mitigating user conflicts, and improving the quality of visitor experiences. SRMAs may have Recreation Management Zone (RMZ) subunits that are managed for distinct types of recreation experiences within a single SRMA. Any recreation facilities, site improvements, or resource protection actions would be consistent with, and would not change the recreation setting character defined for each RMZ, as described in Appendix K.

Each alternative includes the existing John Day River SRMA. Alternatives 2-5 would expand the John Day River SRMA and designate new SRMAs for Little Canyon Mountain, Bridge Creek, North Fork John Day River, and South Fork John Day River. Together, these five SRMAs would encompass 294,580 acres (64% of public lands in the plan area) and would be managed for different types of recreation opportunities and experiences as appropriate for specific areas.

Under Alternatives 2-5, the levels and types of recreation access and use across the plan area would vary based on differentiation of settings in these five SRMAs, providing more focused water-based, motorized and non-motorized management emphasis. Greater specificity and management focus on prescribed setting character and associated activities would increase the quantity and quality of recreation opportunities available for all recreationists compared to Alternative 1.

Under Alternatives 2-5, a variety of designated routes and trails enhance the spectrum of distinct recreation opportunities and the quality of experiences, and also help meet future recreation demand. Designated routes and trails would be developed, including loop routes, to help reduce user conflicts through separation of motorized and non-motorized uses in some areas and shared use on designated routes and trails in other areas. An ERMA is an area outside of an SRMA that emphasizes traditional dispersed recreation, with undeveloped character and a lower level of management intervention. These areas may include developed and primitive recreation sites with minimal facilities. Designation of the 59,163-acre Rudio Mountain/Johnson Heights and 2,516-acre Dixie Creek ERMAs would result in higher quality motorized and non-motorized activities by increasing resource protection, improving public safety, and reducing user/landowner conflicts in those areas compared to Alternative 1 (see Appendix K for additional details regarding each SRMA).

### ***River-Based Recreation***

The BLM would continue to manage river use in all John Day River segments to provide quality river-based recreation. Recreation use in some river reaches and at certain times of year may reach levels that trigger Limits of Acceptable Change management actions. Upland recreation opportunities within the John Day River canyon area would continue to provide quality hiking, hunting, photography, and backcountry navigation opportunities. The quality of these river-based recreation opportunities would be the same under all alternatives.

All alternatives would carry forward existing recreation site developments on BLM-managed lands. Existing developments along the main stem John Day River would continue to support current and future, river and land-based recreation use, enhancing water-based and upland recreation opportunities within this river corridor.

Under Alternatives 2-5, the existing John Day Wild and Scenic River SRMA would continue to provide quality non-motorized and motorized recreation opportunities. Recreation facilities along the John Day Wild and Scenic River would continue to be upgraded to protect resources. A new semi-primitive campground may be developed on the south side of the John Day River at Priest Hole (north of Mitchell) and possibly a semi-primitive campground on the South Fork John Day River. These developments would provide more desirable locations for camping and day-use. Two semi-primitive campgrounds may also be developed on the North Fork John Day



River, providing additional camping and day-use opportunities in this area. The seasonal use restriction from April 15–November 30 annually would not affect most visitors.

Under Alternatives 2–5, prohibiting cross-country OHV use in the John Day riverbed during low flows would displace those OHV users who are accustomed to this access. However, non-motorized recreationists, riparian resource, and water quality values would benefit from this OHV closure.

Under Alternatives 2–5, the quality of recreation opportunities and experiences would be higher for all types of recreation currently provided for, compared to Alternative 1.

Under Alternatives 2 and 5, the North Fork John Day River would be recommended for designation as a Wild and Scenic River with all 37 miles of the designated reach classified as “Scenic.” Under Alternative 3, there would be 18 miles recommended for “Scenic” and 19 miles recommended for “Recreational” classification, which allows for more motorized access and development along the river than “Scenic.” If the North Fork John Day River is designated Wild and Scenic, motorized recreation access and opportunities would be greater and the setting character would be less primitive along 19 miles of the river under Alternative 3 than under Alternatives 2 and 5. Boaters on the river would likely see more evidence of human use and hear more motor sounds under Alternative 3 than under Alternatives 2 and 5. Under Alternative 1, the decision to recommend Wild and Scenic designation would be deferred. Under Alternative 4, the river would not be recommended for Wild and Scenic designation so outstandingly remarkable recreation values specific to the river might not be protected, but there would be fewer restrictions on motorized recreation on adjacent lands.

### ***Non-Motorized Recreation Opportunities***

As discussed here, non-motorized recreation may include the use of a vehicle for transportation to and from a recreation site, but while at the site, the vehicle is parked and not used during the recreation activity. For non-motorized recreationists, motor vehicle use is neither the primary focus nor an integral part of the recreation experience.

River-based non-motorized recreation activities in the planning area include rafting and drift boat floating, canoeing, kayaking, and boat- and shore-based fishing. Land-based activities include picnicking, day hiking, backpacking, camping, mountain biking, bird watching, wildlife viewing and other forms of nature study, nature photography, and berry and mushroom collecting. Although many hunters utilize OHVs, a significant number do not for various reasons, including a preference for quiet hunting settings (e.g., wilderness areas), beliefs that OHV noise reduces the chance of finding game animals and can disrupt hunts, or concerns about what constitutes “fair chase.” Hunters who do not use OHVs in any way during their hunts, including retrieval of killed game, are defined as non-motorized recreationists.

Changes in OHV area designations from Open to Limited under the action alternatives are intended primarily to maintain and improve riparian, soil, vegetation, wildlife, and wilderness resources. However, these designation changes would also indirectly improve opportunities for quiet, non-motorized recreation by providing more areas where foot travelers, equestrians, and other non-motorized recreationists would not encounter OHVs traveling cross country. Non-motorized recreation opportunities would also improve as a result of better differentiation of recreation settings, more focused management, and separation of incompatible recreation activities to minimize conflict.

Only non-motorized recreation activities would be permitted in Primitive and Back Country settings on 134,454 acres under Alternatives 2, 3, and 5, and 142,465 acres in Alternative 4. Under Alternative 1, no acres would be designated Primitive and Back Country, so non-motorized recreationists could encounter OHV users in these areas, reducing non-motorized recreation experience quality and potentially displacing non-motorized visitors. Separation of motorized and non-motorized use in some areas under Alternatives 2–5 would reduce encounters between motorized and non-motorized visitors, improving non-motorized recreation experiences in the North Fork John Day River, South Fork John Day River, Bridge Creek and Lower John Day SRMAs.

Under Alternatives 2–5, OHV use would be subject to seasonal and year-round closures in some areas and otherwise mostly limited to designated routes and trails. Restrictions on OHV use such as these are generally motivated by resource protection concerns rather than explicit goals to improve non-motorized recreation. However, compared to Alternative 1, OHV restrictions under Alternatives 2–5 would result in additional



non-motorized recreation settings and experience opportunities. Compared to Alternatives 2 and 3, which allow cross-country OHV travel on 3,971 acres on the Rudio Plateau, there would be higher quality non-motorized recreation opportunities on the Rudio Plateau under Alternatives 4 and 5, which restrict OHV travel in this area to designated routes. Non-motorized recreation quality on Little Canyon Mountain would be highest under Alternative 5, which would close this area to all OHV use, compared to Alternatives 2, 3, and 4, all of which allow some degree of OHV use at Little Canyon Mountain.

Opportunities to develop non-motorized trails under Alternatives 2–5 would increase recreation opportunities for visitors seeking hiking, backpacking, wildlife and bird viewing, hunting, mountain bike or horseback riding, or berry or mushroom picking opportunities in areas not open to OHV use.

Non-motorized recreation visitors may be displaced, in the event of competition to ride or use the same trail, or if sounds from OHV use intruded on the quality of the desired non-motorized recreation experience. Hikers and horseback riders may also be displaced if no designated trails exist for their preferred use, or if OHV use and OHV sound increase in the future.

## **Motorized Recreation**

### ***Motor Sound in Recreation Settings***

Nearly all public land visitors use vehicles to get to their preferred settings. Some use a vehicle only for transportation to their recreation site where it is parked and not used during the recreation activity. For other visitors, vehicle use itself is either the primary recreational activity or an integral part of it (i.e., OHV-based hunting). In this document, “motorized recreation” means the recreational use of single-rider three- and four-wheeled all-terrain vehicles (Class I), larger 4x4 vehicles with capacity for a driver and one or more passengers and that may or may not be “street legal” (Class II), and motorcycles (Class III).

Sound is any change in air pressure that the human ear can detect, from barely perceptible to levels that can cause hearing damage. Sounds that are unpleasant, unwanted, or disturbingly loud are generally considered “noise” (Michael Minor & Associates 2008). When a sound is noticed in a recreation setting, people evaluate it in the context of past experiences and the activities in which they are engaged, then attach meaning to it and judge its appropriateness for the setting and situation. People are generally more tolerant of sound from vehicles used for transportation than of sound from vehicles used for motorized recreation.

Most public land recreation settings contain fairly low levels of natural ambient background sound. These baseline setting conditions are valued and commonly sought by recreationists. Higher natural ambient sound levels may result from temporary or long-term situational factors such as weather conditions (i.e., wind), moving water, or bird and wildlife calls. Because these sounds are naturally occurring phenomena, they are generally pleasing or not annoying to recreationists.

Motorized recreation adds motor sounds to natural ambient background sounds at levels that can be significant. Unlike natural ambient background sounds, sound from motorized recreation is often perceived as annoying by other visitors who hear it. The characteristics of motorized recreation sound are similar to conditions in urbanized areas that non-motorized recreationists are generally seeking to escape. Thus, the presence of motorized recreationists can reduce the quality of, or even preclude the type of experience that non-motorized recreationists seek. The presence of non-motorized recreationists generally has a much smaller effect on motorized recreationists (Manning 1999).

Research suggests that humans respond to noise in outdoor recreational environments based on a combination of physical and socio-psychological factors (Kariel 1990). In general, louder sounds are more annoying, but loudness alone is not a good predictor of annoyance. Higher frequency sounds are generally more annoying than lower-pitched ones. Rhythmic sounds such as those from engines, as well as sounds that are intermittent, tend to be more annoying than continuous ones.

People often visit outdoor recreation settings to escape urban noise, enjoy the generally low ambient sound levels and other sensory attributes of natural environments, and reduce stress. Sounds that interfere with these goals would be considered as annoying. In this context, motor sounds that may be detectable at great distances at low



levels may still provoke reactions. Conversely, where motor sounds are considered inevitable, quite high sound levels may be tolerated. Instances where sound intrusions are considered as bad behavior and preventable, such as a motorcycle joyriding in a campground, are considered particularly annoying. People are quite tolerant when sound is considered necessary or beneficial, such as a rescue helicopter. For sounds considered annoying, the degree of annoyance is greater in the evening than during the day and greatest at night. Evaluation of pleasing sounds is constant, regardless of time of day (Kariel 1990).

The distance at which OHV noise may be detected is quite dependent on situational factors, such as local topography, sound characteristics of the individual vehicles, existing ambient background sound, and number of vehicles traveling together. One study found that 83 decibels OHV sound was detectable at a distance of 6,200 feet in a "typical forest environment" (Harrison 1974). The characteristics of OHV sound vary depending on OHV type. Class II OHVs typically emit lower frequency sounds than Class I or Class III OHVs.

Factors that affect how sound propagates away from its source, and thus how loud it appears to a person who hears it, include:

- **Spherical spreading loss**—the loss of energy that occurs as sound waves spread over a larger and larger distance. With each doubling of distance, sound emanating from a point source decreases approximately 6 decibels. For example, an OHV emitting 96 decibels at 25 feet would register 90 decibels at 50 feet, 84 decibels at 100 feet, and so on. At distances of 1,500 feet or less, spherical spreading loss affects perceived loudness more than any other factor.
- **Atmospheric absorption loss**—occurs as sound passes energy to air molecules as it travels through the atmosphere. Atmospheric absorption loss varies with air temperature, humidity, elevation (air pressure), and sound frequency in very complex ways that make prediction difficult. Beyond 1,500 feet, atmospheric absorption loss affects perceived loudness more than any other factor.
- **Absorption by foliage and ground cover**—In outdoor environments, foliage absorbs some sound energy, as do porous ground surfaces. Absorption by foliage varies only slightly with different plant species. At distances of 75 feet or less, even very dense foliage absorbs a very little sound energy. At distances over 350 feet, there is no additional loss in sound energy due to foliage absorption. At greater distances, sounds propagate above the vegetation. The Federal Highway Administration provides for up to a 5 decibel reduction in traffic noise for locations with at least 100 feet depth of dense evergreen foliage (Michael Minor & Associates 2008).
- **Refraction**—affects sound energy at distances greater than about 350 feet. As sound waves encounter atmospheric conditions that slow them, such as cooler air, the waves "bend" (refract) in that direction. In daytime, this effect causes sound waves to bend upward when there is warm air near the ground and cooler air above it. At some distance from the bending waves, a shadow zone is created where the sound will appear less loud. At night, when air near the ground cools, sound waves from the same source may bend downward. In this case, the same sound level emission at the same distance would seem louder than during the day. Wind also refracts sound waves. For example, a person downwind from a sound source will perceive the sound as louder than a person upwind of the same source.
- **Diffraction**—occurs when sound energy is scattered after encountering a barrier. The amount of scatter depends on the amplitude and frequency of the sound, the size of the barrier, the distance from the sound source to the barrier, and the distance from the person perceiving the sound to the barrier. Within limits, the taller the barrier, and the closer the sound source or the sound perceiver is to the barrier, the more the barrier reduces the sound level at the perceiver's location (Harrison *et al.* 1980).

### **Motorized Recreation Opportunities**

For some recreationists, vehicle use is either the primary recreational activity or an integral part of it (e.g., OHV-based hunting). In this document, "motorized recreation" and "OHV recreation" means recreational use of single rider three- and four-wheeled all-terrain vehicles (Class I), larger 4x4 vehicles with capacity for a driver and one or more passengers and that may or may not be "street legal" (Class II), and motorcycles (Class III).

Land areas and trails administered by the BLM are designated as Open, Limited, or Closed to operation of OHVs. In Open areas, cross-country travel by all types of vehicles is allowed at any time, away from existing roads and



trails. In Limited-area designations, OHV use is restricted to designated routes, to specific times or seasons, or to specific numbers or types of vehicles only. Off-highway vehicle use is prohibited in areas designated as Closed.

In 2007, the BLM directed its field offices to shift OHV use away from large open areas and focus OHV travel on designated roads and trails (BLM Instruction Memorandum No. 2008-014). Each action alternative responds somewhat differently to this policy direction by shifting from 229,699 acres (Alternative 3) to 234,272 acres (Alternative 5) out of OHV Open designation. Roughly two-thirds of these acres would be designated Limited, and the other one-third would be designated Closed. About 135,361 acres shifted out of Open designation under all action alternatives have sensitive soils (high erosion potential and >30% slope) and/or vulnerable riparian areas (perennial, intermittent, and fish-bearing streams) that render them unsuitable for OHV use and subject to closure regardless of the OHV designation change. Thus, the total area that could realistically be expected to remain available for cross-country OHV travel in the future under Alternative 1, but would not be available for such use under the action alternatives, would range from about 94,342 acres under Alternative 3 to about 98,915 acres under Alternative 5.

Under Alternative 1, there would be 234,272 acres of the plan area that would remain open to unrestricted cross-country OHV travel and 67,332 acres that would remain closed to OHV use. Under Alternative 4, there would be 155,325 total acres that would be closed to OHV travel, compared to about 138,732 total acres that would be closed under Alternatives 2, 3, and 5. Thus, compared to Alternative 1, about 71,363 additional acres would be closed under Alternatives 2, 3, and 5, and about 87,955 additional acres would be closed under Alternative 4. Areas where OHV use would be limited to designated roads and trails would remain at 155,228 acres under Alternative 1 and would range between 301,043 and 315,020 acres under the action alternatives.

Under Alternatives 2 and 3, there would be 3,971 acres on the Rudio Plateau that would remain open to unrestricted cross-country OHV travel. Alternative 3 would also include the 598-acre Golden Triangle OHV open area near the town of Mitchell. Under Alternatives 4 and 5, OHV travel in the Rudio Plateau and Golden Triangle areas would be restricted to designated routes. OHV use would be allowed at Little Canyon Mountain to varying degrees under Alternatives 2, 3, and 4, but not under Alternative 5.

Over the long term, shifting OHV travel away from unrestricted cross-country use to a designated route system is expected to result in significantly less extensive OHV-related resource impacts and conflicts with other resource uses. However, this shift is also likely to result in more intensive use of any remaining open areas and also of the designated OHV route system.

Under Alternative 1, there would be 234,272 acres that would remain open for year-round to dispersed OHV driving on or off existing routes for recreation activities such as horn hunting, backcountry exploration, OHV-supported big game and bird hunting, and rock collecting. Class I and III OHV trails, Class II routes, and technical rock crawling areas would not be provided through an OHV-designated trail or route system, but would still be available to those local OHV users with knowledge of existing opportunities. Loop routes for OHV riding or technical rock crawling would be limited to user-created routes.

Under Alternative 1, existing user-created routes would continue to be used and new ones would be generated. User-created routes are not planned and do not undergo environmental analysis. Poorly located user-created routes often result in significant land, stream, and habitat impacts. Thus, even in the absence of any designation change, some designated Open areas would be subject to emergency closures under 43 CFR §8341.2, which provides the BLM the authority to close areas to OHV use if such use "is causing or will cause considerable adverse impacts" to natural, cultural, or historical resources, or other resource uses.

Under Alternative 1, conflicts and visitor displacement would continue to occur in areas currently being used by both motorized and non-motorized recreationists. As visitor use increases over the long term, conflicts and associated impacts on experience quality could be expected to rise in these areas.

Besides the Little Canyon Mountain OHV open area, no additional OHV trail or route systems would be designated under Alternative 1. Over time, due to the large amount of public lands classified as Open, more unofficial, unplanned OHV areas may be created by riders in other locations on public land outside of Little Canyon Mountain. OHV activities usually involve intensive or repeated use of fairly localized areas and



particular routes such as hill climbs, which could result in resource damage and conflicts with non-motorized recreationists, and with non-recreation resource uses and adjacent private landowners.

Under Alternatives 2-5, OHV use would be concentrated on a smaller amount of routes and areas compared to Alternative 1. Cross-country OHV travel would be allowed at the 3,971-acre Rudio Mountain OHV Open area under Alternatives 2 and 3. Under Alternatives 4 and 5, OHV recreation in the Rudio Plateau area would be restricted to designated routes and trails year-round (Table 4-25). Restrictions on motorized recreation use off designated routes in the Rudio Plateau area could be difficult for BLM to enforce. These restrictions would primarily impact hunters accustomed to using Class I, II, and III OHVs to travel cross-country during hunting seasons in this area. These hunters would no longer be allowed to do so. However, non-motorized recreationists, especially game hunters, would have higher quality recreation opportunities, with reduced or no motorized visitors in the same hunting areas and potentially more productive hunting.

Under Alternative 3, the 598-acre Golden Triangle OHV Area would be established north of Mitchell for seasonal Class I, II and III use. However, this area is currently infested with medusahead (*Taeniatherum caput-medusae*), so eradication would be required before any OHV use would be allowed. It is estimated that eradication would take 3-4 years. Over the long term, the designation of this area for OHV use would provide additional opportunities for OHV recreationists in an area developed specifically for OHV recreation.

The 2-acre South Pit area at Little Canyon Mountain would be open to cross-country OHV travel by Class II vehicles only (Alternative 2) or by all OHVs (Alternatives 3 and 4). Under Alternative 3, the 2-acre North Pit area at Little Canyon Mountain would be open to cross-country use by Class I and III vehicles. The North Pit area would be closed to all OHV use under Alternatives 4, and 5, and available for use as a parking and staging area only under Alternative 2. (Management issues and actions at Little Canyon Mountain are discussed in more detail below.)

Off-highway vehicle use would primarily be limited to about 330 miles of interim designated routes across 313,668 acres in Alternative 2, 301,043 acres in Alternative 4, and 315,020 acres of public land under Alternative 5. Off-highway vehicle use would be limited to 879 miles across 313,067 acres of public land under Alternative 3 (Table 2-23). Class I and III OHV trails, and Class II routes would be designated and signed in areas designated as OHV Limited with Middle Country, Front Country, or Rural setting character. These recreation setting types allow for motorized and non-motorized access and would provide diverse motorized and non-motorized trail and route opportunities. Analysis, planning, and designation of routes of different lengths and difficulty in varying terrain, including loop routes, are expected to increase experience quality in comparison to use of unplanned routes.

Under Alternatives 2-5, opportunities to drive OHVs off-route across open terrain or on unplanned or undesignated, user-created routes would be eliminated across much of the plan area, reducing experience quality and the array of opportunities for recreationists accustomed to such access. These recreationists would be displaced, or align their expectations and use with the kind of OHV experiences being provided, or choose to violate OHV restrictions. Opportunities for cross-country travel would remain available on 3,971 acres under Alternative 2; on 4,571 acres under Alternative 3; on 2 acres under Alternative 4; and no acres under Alternative 5.

Under Alternatives 2 and 3, driving OHVs across public lands and off existing routes for activities such as horn hunting, backcountry exploration, OHV-based game and bird hunting, and rock collecting would be restricted to 3,971 acres (Alternative 2) or 4,571 acres (Alternative 3) designated Open. These opportunities would not be available under Alternatives 4 and 5. Off-highway vehicle recreationists could still pursue these activities on a modified basis by using the 333-mile designated interim route system (provided in Alternatives 2, 4, and 5) or the 879 miles in Alternative 3 to access a variety of areas across acres designated as OHV Limited, but would be required to do any off-route exploration by foot. Prohibiting cross-country OHV use in the John Day riverbed during low flows would displace those OHV users accustomed to this access. However, non-motorized recreationists, river recreationists, and riparian resource values would benefit from this OHV closure.

In the short term under Alternatives 2-5, conflicts could increase if non-motorized recreationists also try to recreate in areas where OHV use is more concentrated, especially shared-use trails, due to greater chances of contact with OHV users. Crowding and conflicts resulting from less extensive, more concentrated OHV use could also occur among groups of OHV users at certain locations and times of year. Under all alternatives, the chances for conflict would be greatest during weekends, holidays, and hunting seasons.



Off-highway vehicles are commonly used by OHV-based hunters to retrieve killed game. Hunters successfully retrieved their game without the use of OHVs prior to development and widespread use of these vehicles, and a significant number of hunters still do not use OHVs. However, OHVs have made game retrieval much easier and many hunters in the planning area use OHVs for this purpose. Alternative 1 has the largest amount of public lands (234,272 acres) open for cross-country motorized OHV use, so opportunities for game retrieval using OHVs off routes are highest under this alternative. Under Alternatives 2 and 3, there would be 3,971 acres on the Rudio Plateau and an additional 598 acres in the Golden Triangle area under Alternative 3 open for year-round game retrieval using OHVs. Opportunities for motorized game retrieval would be limited to designated routes under Alternatives 4 and 5 (Table 2-23).

Restrictions on the use of OHVs to travel cross-country to retrieve game under Alternatives 2-5 would require additional law enforcement time to enforce compared to Alternative 1, which has considerably less land area where such use is restricted. Realistically, some hunters would likely violate these restrictions and not remain on designated routes when retrieving big game.

Under any of the action alternatives, recreationists familiar with the plan area would likely go through a period of adjustment and adaptation as they learn how changes in management are affecting their preferred settings. Over time, conflicts are expected to decrease as a result of better differentiation of settings, increased user familiarity with use patterns in these settings, and increased management focus on targeted activities and experiences. It is expected that most OHV recreationists would be able to achieve satisfying experiences by using a diverse system of designated routes and any remaining open areas.

Alternative 1 would have a 742-mile interim transportation system, including 572 miles open year-round, 61 miles open seasonally, and 250 miles of "landlocked" routes open but inaccessible to the public without permission for access from private landowners. Alternatives 2, 4, and 5 would have approximately a 333-mile system, including 86 miles open year round, 138 miles open seasonally, and 9 miles "landlocked." Alternative 3 would have an 879-mile system, including 295 miles open year round, 475 miles open seasonally, and 250 miles "landlocked." In consideration of the well-documented effects of unrestricted OHV use on soils, watersheds, and wildlife habitat (Ouren *et al.* 2007), Alternatives 2-5 have more seasonal motorized closure acreage to meet wildlife and watershed health objectives than Alternative 1. Alternative 3 has the same seasonal motorized closure areas as Alternative 2, but there are more route miles that remain open and thus greater motorized recreation opportunities under Alternative 3. Opportunities for OHV use would be lost in seasonally closed areas, primarily in the winter and early spring when soils are wet and most vulnerable to rutting and compaction from OHV use.

Under the action alternatives, opportunities for a loop trail riding or driving experience, or for technical rock crawling experiences would be more available than under Alternative 1. Trail or route loops would be identified and signed, providing more opportunities for non-local OHV users who do not possess knowledge of unsigned existing opportunities. Loop routes open for travel in one direction only can increase experience quality by facilitating trips that do not require users to retrace the same route to return to the trailhead and by reducing conflict and resource damage that can result from encounters between 4-wheel OHVs traveling in opposite directions. Loop routes could also help increase safety by reducing chances for collisions.

Assuming no decrease in vehicle use, the OHV traffic volume on the BLM road system and the OHV route and trail maintenance needs would likely increase under Alternatives 2, 4, and 5 because use would be concentrated on a significantly smaller number of route miles compared to Alternative 1. This could lead to more contacts among motorized recreationists and decreased experience quality. Compared to Alternative 1, the total number of route miles open under Alternative 3 would increase, although there would also be more seasonal route closures, so the potential effects of Alternative 3 compared to Alternative 1 are unclear. The extent to which unauthorized user-created routes across the landscape would continue to be created and used under the action alternatives would depend on the availability and diversity of legal, designated OHV routes and compliance with and enforcement of OHV use restrictions.

Rock crawling is a form of OHV recreation that involves low-speed travel across extreme terrain in Class II OHVs that are often significantly modified for such purposes with larger tires, suspensions lifts, lower gears, and undercarriage armor to protect from contact with rocks. Under Alternatives 2-5, if determined to be suitable, a technical OHV Class II rock crawling area would be designated on public lands between Service Creek and



Kimberly on the north side of Highway 19. This area would provide unique Class II rock crawling opportunities for visitors seeking this type of recreation opportunity. The specific route or routes to be designated would be identified in consultation with resource specialists and user groups during plan implementation in order to minimize conflicts with other resource values (wildlife, sensitive soils, and wetlands) and to maximize the quality of the recreation resource. Use would be limited to designated routes; open cross-country travel would be prohibited.

Where rock crawl vehicles travel across bedrock, any moss or lichen cover would be quickly removed but further biophysical impacts may be relatively minimal. To the degree that routes traverse areas interspersed with soil, vegetation, or waterways, rock crawling may be associated with reduced vegetation cover, soil compaction and erosion, wildlife habitat disturbance, and potential impacts to water quality. There may be greater potential with rock crawling than with other types of OHV use for petrochemical fluid leakage into the environment if a vehicle sustains powertrain damage from extreme use or impact with rocks. Rock crawling commonly involves use of on-board electric winches to pull vehicles over particularly challenging obstacles, sometimes using trees as anchor points. There is potential for trees to be uprooted by this practice. Also, use of a metal winch cable directly against the tree trunk may cut through the cambium layer and girdle and kill the tree. Heavy synthetic fabric "tree-saver" winch straps are available to minimize such damage.

Rock crawling is an OHV activity that generally involves intensive use of a relatively limited area. Once routes have been established and accepted as high quality, enthusiasts typically utilize them repeatedly although pioneering of new routes in adjacent areas may still occur and spur routes may be created by users to access campsites. Areas immediately adjacent to rock crawl routes may be utilized for vehicle repairs and by spectators traveling on foot. As with other forms of wildland recreation, the incremental impacts of rock crawling are generally greatest during the initial phase of use after a new route is established. After the route has been used for a period of time, incremental impacts of additional use are typically lower.

### *Little Canyon Mountain OHV Use and Adjacent Landowners*

Motorized recreation sounds may affect private landowners who choose to live in areas adjacent to public lands where motorized recreation occurs. Within the plan area, scoping revealed that conflict exists between motorized recreationists at Little Canyon Mountain (especially the North and South Pit Areas) and residents living on adjacent private lands. Some background and analysis regarding this issue is provided below, followed by discussion of how BLM addressed it in Alternatives 2-5 and expected outcomes of these actions.

Sound from OHV use in the Little Canyon Mountain area has occurred for decades, but has changed over time as new types of OHVs were introduced to the marketplace. Sound from motorcycle, ATV, or full-size 4x4 vehicle motors results from OHV users riding up or down the slopes of Little Canyon Mountain, or riding in the North and/or South Pit areas, and from climbing steep hill sides that define these OHV areas. These OHV sounds have historically been a component of the ambient sound in the area. Other sources of sound contributing to the ambient sound level in the area include, but are not limited to, vehicles traveling on the adjacent county road and highway, residential sounds, and aircraft using the nearby airport.

Some adjacent landowners may find the sound from OHV use to be annoying, while other landowners may not. For adjacent landowners who find OHV sound annoying, the level at which it would become annoying would likely vary depending on individual preferences. Some may find any perceptible OHV sound to be annoying, while others might tolerate such sound unless it became "too loud," a subjective assessment that would again vary with individual preferences and sensitivity.

The Federal Highway Administration criterion for traffic noise abatement in residential areas is 67 decibels at the exterior of a residence. Oregon law defines real properties "... normally used for sleeping ..." as noise sensitive properties (OAR 340-035, Noise Control Regulations). These rules stipulate that operation of motor vehicles shall not cause the ambient sound level to exceed 60 decibels at any noise sensitive property within a distance of 1,000 feet or less between the hours of 7 a.m. and 10 p.m., and 55 decibels from 10 p.m. until 7 a.m. Private lands adjacent to the North and South Pit areas are currently zoned rural residential. Most regulation of noise in residential areas is left to local municipalities. A common standard is 55 decibels during daytime and 5-10 decibels lower at night (typically defined as 10 p.m. to 6 a.m.), with allowances that these levels could be exceeded for brief periods. Currently, there is no local ordinance in effect for noise that applies for residents near Little Canyon Mountain, so the current legal limit for motor vehicle sound in this area is 60 decibels.



The amount of ambient sound at an adjacent private residence that is contributed by OHV use at the North and South Pit areas would vary according to several factors. These factors include the number, type, and location of OHVs in use at any one time; the amount of throttle being applied and sound emitted by each individual vehicle; atmospheric conditions such as air temperature and wind; other sounds that contribute to the ambient sound level; and the distance, topography, foliage, and ground cover between the OHV sound being emitted and the receiving location. It would be impractical (if not impossible) to fully account for all of these variables and their interactions and still produce standardized numbers to use for analysis. Thus, potential OHV sound levels are estimated using some fundamentals of sound propagation, and some assumptions regarding how this process occurs at the North and South Pit areas.

Under ideal conditions (e.g., across open water or pavement), sound from a point source will be attenuated (reduced) at a rate of 6 decibels with each doubling of distance from the sound source. Sound attenuation with distance is generally somewhat higher than under "ideal" conditions if the ground cover is grass or loose soil. Because ground cover varies in areas adjacent to the North and South Pits, no allowance is made for it, although some sound attenuation probably does occur due to ground cover. The Federal Highway Administration estimates up to 5 decibels reduction in traffic noise for locations with at least 100 feet of dense evergreen foliage. Because vegetation varies in areas adjacent to the North and South Pits and is generally not dense, no allowance is made for sound attenuation due to absorption by foliage. The starting distance for estimating sound levels at various distances is set at 20 inches, based on the most commonly-used standard for measuring OHV sound emissions for enforcement purposes (Oregon Department of Environmental Quality Motor Vehicle Sound Measurement Procedures Manual NPC-21; Society of Automotive Engineers Standard J-1287).

The North and South Pit areas are each approximately 2 acres in size. Based on this small amount of terrain, the size of OHVs, and the ways that OHVs are used, it is assumed that a limited number of OHVs would use the pit areas at any one time. Sound emissions from multiple sources are not additive. For example, two OHVs producing 90 decibels each will combine to produce 93 decibels, not 180 decibels. This analysis assumes an initial sound level of 103 decibels, which one study found was equivalent to five OHVs operated simultaneously under load with exhausts pointed in the direction of the sound receiver (Michael Minor and Associates, Inc. 2008). Although it is possible that more than five OHVs may sometimes be in use at the pit areas, the sound level resulting from this five-vehicle use scenario was judged to represent a reasonable "average maximum" for the purposes of analysis.

Table 4-23a shows estimated sound levels at a range of distances from the North and South Pit areas, under the assumptions outlined above. These estimates are conservative in that the BLM expects that they would rarely be exceeded, and actual sound levels would usually be lower under any of the action alternatives.

**Table 4-23a. Estimated Attenuation of Sound from Five OHVs Operated Simultaneously Under Load Based on 6 Decibels Attenuation With Each Doubling of Distance.**

Distance from OHV sound (feet)	1 $\frac{1}{3}$	3 $\frac{1}{3}$	6 $\frac{2}{3}$	13 $\frac{1}{3}$	26 $\frac{2}{3}$	53 $\frac{1}{3}$	106 $\frac{2}{3}$	213 $\frac{1}{3}$	426 $\frac{2}{3}$	853 $\frac{1}{3}$	1,706 $\frac{2}{3}$
Sound level (decibels)	103	97	91	85	79	73	67	61	55	49	43

Table 4-23b shows the number of residences that occur in the proximity of the North and South Pit Areas at Little Canyon Mountain in 0.25-mile increments up to 1 mile. From the North Pit, it is 326 feet to the nearest property line, and 937 feet to the nearest residence. From the South Pit, it is 1,654 feet to the nearest property line, and 1,839 feet to the nearest residence. Based on actions taken to mitigate OHV sound, the BLM estimates that OHV sounds under any of the action alternatives are unlikely to exceed the commonly used standard of 55 decibels for daytime noise in residential areas at any residence in the proximity of the North and South Pit areas. It is possible that sound from OHV use could occasionally exceed 55 decibels at the private property line closest to the North Pit. The BLM notes that assuming a 55 decibels limit is conservative compared to the current legal limit of 60 decibels for motor vehicle sound that applies to residences adjacent to the North and South Pits.



**Table 4-23b. Number of Private Residences Within a 1-mile Proximity of the North and South Pit Areas at Little Canyon Mountain.**

Location	Distance				Total (≤ 1 mile )
	0–1,320 feet (0–0.25 mile)	1,320–2,560 feet (0.25–0.50 mile)	2,560–3,960 feet (0.50–0.75 mile)	3,960–5,280 feet (0.75–1 mile)	
North Pit	1 residence	6 residences	26 residences	24 residences	57 residences
South Pit	0 residences	4 residences	10 residences	25 residences	39 residences

To complement and test the assumptions made in the analysis outlined above, BLM staff conducted a field test of sound generated by OHV use at the North and South Pit areas. Sound data was collected by seven vehicles, including two single-rider 4-wheel (Type I) OHVs, two 2-stroke motorcycle (Type III) OHVs, two full-sized 4WD truck (Type II) OHVs, and one “side-by-side” utility terrain vehicle were used. All seven OHVs were driven concurrently in a manner intended to produce the highest possible combined sound levels at adjacent residences (i.e., use concentrated at the side of each pit closest to the nearest residence, heavy application of throttle, climbing steep inclines, with exhausts directed primarily at the receiving location). This use scenario was judged to be a reasonable approximation of “average maximum” OHV sounds conditions at the North and South pit areas. Public OHV use could generate different volumes and speeds. However, it is likely speeds would decrease with greater volumes. Reduced OHV operating speeds typically would reduce noise levels.

Recordings of noise and reports of process and findings were completed by Axiom-Points, LLC. The full report is on file at the Prineville District Office. The noise level was averaged and then rounded to the nearest whole decibel (dBA). The criteria for acceptability of the measurements were that different Ambient Noise measurements were within +/- 3 dBA of each other, and no extraneous sound sources contaminated the data. Noise measurements were taken until noise levels during a particular sample time frame stabilized at each monitoring location. Repeat measurements were obtained until the measurements agreed within 1 dBA. Measurements were averaged to establish one set of noise data for each position.

Data acquisition involved noise measurements at selected locations to represent three field conditions: OHVs in use at the North and South Pits and OHVs not in use. Results at each location are shown in Table 4-23c.

**Table 4-23c. Field Measurements of Sound Levels (Decibels) With a Combination of Seven OHVs in Concurrent Use at the North Pit or South Pit.**

Little Canyon Mountain February 9, 2010 Sound Assessment				
Location	Distance from House or ‘Edge’ of Travel Way (feet)	Ambient Noise Leq (dBA) by Field Condition		
		OHV not in Use	OHV in Use South Pit	OHV in Use North Pit
R1	14	40	31	47
R2	10	33	39	No Measurement
South Pit	50	No Measurement	66	
	100		57	
North Pit	50 at grade		No Measurement	67
	50 above cutbank			54
NE of North Pit Entrance	574 from R3			49

Based on the ambient field measurements, noise propagation from the pits drops off at a minimum of 6 decibels per distance doubling. The topography surrounding the pits helps to reduce OHV noise because steep cut banks act as noise barriers. Vegetation in the area surrounding the pits reduces noise levels from OHVs because of its density (cannot be seen through). A 200-foot width of dense vegetation between the noise source and the receiver can reduce noise by 10 decibels, which cuts the loudness of noise in half. Ambient noise levels measured at residences are no greater than 47 decibels with OHVs in use for this field test. The change in dBA was roughly 6 to 7 with OHVs in use at R1 and R2. This level may be compared to living on quiet residential street (Axiom-Points 2010).



Sound levels were measured for only one of many possible scenarios for OHV use at the North and South pit areas. However, these field test results suggest that BLM estimates shown in Table 4-23a for (1) maximum sound levels from OHV use at the North and South Pit areas, and (2) the rate of OHV sound attenuation away from the pit areas, under any of the action alternatives, are conservative and not likely to be exceeded under most conditions, as long as all OHVs in use meet sound level regulations.

Table 4-24 shows that sound from OHV use would be reduced under Alternatives 2–5, compared to Alternative 1, due to time of day, day of week, type of OHV, and/or seasonal OHV restrictions. The cumulative effect of these restrictions on OHV use would reduce OHV sound, due to reduced OHV use under Alternatives 2–5, especially Alternatives 4 and 5.

**Table 4-24. Number of Days Sound From Off-Highway Vehicle Use Could be Heard on Public Land From Little Canyon Mountain Area.**

Action	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
On motorized use trails in central portion of LCM	365	365	365	209	0
On OHV trails in Buffer Areas	365	365	365	365	0
North OHV Pit	365	0	365	0	0
South OHV Pit	365	365	365	365	0

### *Little Canyon Mountain Proposed Management Actions*

The effects of management actions proposed for the North and South Pit Areas, and for Little Canyon Mountain, are discussed below for each alternative. Management actions proposed for Little Canyon Mountain under Alternatives 2–5 reflect variations in ways to reduce conflict between OHV use and adjacent landowners, increase recreation experience quality for non-motorized recreationists, decrease the extent of impacts resulting from unrestricted OHV use, and provide diverse and satisfying OHV-based recreation opportunities. Of the action alternatives, Alternative 3 restricts OHV use and benefits non-motorized recreationists in the Little Canyon Mountain SRMA the least, whereas Alternative 5 restricts OHV use and benefits non-motorized recreationists the most.

### **Alternative 1**

#### *North and South Pit Areas*

Under Alternative 1, the North and South Pit areas at Little Canyon Mountain would remain open to all OHV use with no restrictions on time of day use or vehicle type. Sounds from OHV use at the North and South Pit areas would be most frequent and apparent under Alternative 1.

#### *Little Canyon Mountain*

Under Alternative 1, the Little Canyon Mountain area would not be designated as a SRMA. The area would remain open to unrestricted cross-country travel by all types of OHVs without time of day or time of year restrictions. There would not be trails dedicated to non-motorized use. Motor sounds would continue day or night, producing the highest potential for conflicts with adjacent landowners and non-motorized recreationists who find these sounds annoying. Limited enforcement of decibel sound limits would continue.

Extensive open areas with little or no trail and public land signing would result in OHVs traveling cross-country, occasionally across private land boundaries, and on existing user-created routes, some of which also extend onto private lands. Thus, potential for trespass onto adjacent private lands and conflicts with these landowners would be highest under Alternative 1.

Under Alternative 1, unregulated and increasing use would cause trail and route conditions to degrade over time. The area would not benefit from SRMA designation, which would occur under any of the action alternatives and focus funding on planning, design, maintenance, or erosion controls to mitigate impacts from OHV use. Unplanned, user-created routes would offer the only opportunities for OHV users seeking more challenging routes. Conflicts between motorized and non-motorized recreationists would likely increase over the long term, as recreation use increases on the existing system of routes that are undifferentiated by user type.



## **Alternative 2**

### ***North and South Pit Areas***

Under Alternative 2, the 2-acre North Pit area would be closed to all OHV use except as a parking and staging area, rather than open to all OHV use as in Alternative 1. The 2-acre South Pit area would be open to cross-country OHV travel by Class II vehicles only, rather than open to all OHVs as in Alternative 1. Class II OHVs typically emit lower frequency sound than Class I or III OHVs, which would be excluded from the South Pit under Alternative 2. Lower frequency sounds may be less annoying than higher frequency sounds in recreation settings (Kariel 1990). Under Alternative 2, the maximum allowable OHV sound level at the South Pit area would be reduced from the current Oregon state standard of 99 decibels to 96 decibels.

Compared to Alternative 1, Alternative 2 would be expected to result in reduced OHV noise impacts to adjacent landowners because the North Pit would be used only as a parking and staging area rather than open to all types of OHV use and the maximum allowable sound emission for individual vehicles would be reduced; as a result, lower frequency OHV sound would emanate from the South Pit.

Under Alternative 2, OHV use at the South Pit would be limited to 9 a.m.-dusk daily. This time of day restriction would benefit recreationists who desire opportunities for quiet recreation in this area prior to 9 a.m., and would preclude chances that adjacent landowners could be exposed to OHV sounds in the early morning hours. Impacts to OHV users from this restriction are expected to be minimal since most current use occurs after 9 a.m.

### ***Little Canyon Mountain***

Under Alternative 2, except for Class II OHV use at the South Pit area, opportunities for Class I, II and III OHV use would be limited to designated routes whereas under Alternative 1, OHVs of all types would be free to travel cross-country on Little Canyon Mountain. Under Alternative 2, OHV use on Little Canyon Mountain would be limited to 9 a.m. - dusk daily, whereas under Alternative 1 OHV use could potentially occur at any time of day or night.

Under Alternative 2, designated routes and trails would be developed to help reduce user conflicts, separate motorized and non-motorized uses in some areas, and provide shared use on designated routes and trails in other areas. Limiting OHV use to a system of designated motorized trails located away from private land boundaries would decrease the amount of area affected by sounds and environmental impacts associated with OHV use, and resulting conflicts. Motorized opportunities would be reduced and non-motorized opportunities would be enhanced by development of a non-motorized trail system close to John Day and Canyon City under Alternative 2.

Opportunities that exist under Alternative 1 for OHV users to drive their vehicles across the landscape away from existing routes on Little Canyon Mountain would not be available under Alternative 2. Existing trails and routes would be augmented by limited development of new trail or routes, as necessary, to provide non-motorized and motorized Class I and III trail and Class II route loops. Some designated trails or routes may be limited to specific types of OHV use, such as a technical Class III trail, which would enhance experience opportunities for Class III OHV recreationists compared to Alternative 1.

Under Alternative 2, Class I and III OHV users would be excluded from the North and South Pit areas and may instead seek riding opportunities elsewhere on Little Canyon Mountain where such use would be permitted on designated routes, increasing the level of use and OHV-related impacts on these routes compared to Alternative 1. These impacts may be mitigated by development of a limited number of additional routes and improved maintenance that may result from SRMA designation.

## **Alternative 3**

### ***North and South Pit Areas***

Under Alternative 3, the South Pit would remain open to Class I, II and III OHV use. The North Pit would be restricted to Class I and III OHVs only. As with Alternative 2, OHV use under Alternative 3 would be limited to 9 a.m. - dusk daily, providing opportunities for quiet recreation in the area prior to 9 a.m., and precluding chances that adjacent landowners could be exposed to OHV sounds in the early morning hours.

Compared to Alternative 1, Alternative 3 would provide some mitigation of conflict with adjacent private landowners by precluding use of Class II OHVs at the North Pit, and by precluding all OHV use at both pits



between the hours of dusk and 9 a.m. Compared to Alternatives 2, 4, or 5, conflicts with adjacent landowners and non-motorized recreationists in the area would be mitigated to a lesser degree under Alternative 3 because OHV use would be allowed in the North Pit, and more types of OHV use would be allowed overall.

### ***Little Canyon Mountain***

Impacts of Alternative 3 management actions at Little Canyon Mountain outside of the pit areas are expected to be similar to those under Alternative 2. One possible exception may be that because Class I and III OHV recreationists would be displaced only from the North Pit under Alternative 3, rather than from both the North and South Pits as under Alternative 2, fewer Class I and III OHV users may seek alternative areas elsewhere on Little Canyon Mountain to drive their vehicles under Alternative 3.

## **Alternative 4**

### ***North and South Pit Areas***

Under Alternative 4, the South Pit would remain open to all types of OHV use, whereas the North Pit would be closed to all OHV use, including use as a trailhead and staging area. Motorized use at Little Canyon Mountain would be limited to the hours from 9 a.m. to 6 p.m. on Mondays, Wednesdays, Fridays, and Saturdays only. This would provide assurance that opportunities for quiet, non-motorized recreation in the absence of OHV effects would always be available on Tuesdays, Thursdays, and Sundays. This assurance would not be provided by Alternatives 1, 2, or 3.

On days when OHVs were in use at the South Pit area, sounds from such use would end at 6 p.m. under Alternative 4, rather than at dusk as under Alternatives 2 and 3. Thus, the hours between 6 p.m. and dusk would be available for quiet non-motorized recreation, and adjacent landowners would not be exposed to OHV sounds during this time, even on days when OHV use was permitted.

Under Alternative 4, OHV sounds emanating from the South Pit area would likely be higher pitched compared to Alternative 2. This is because all types of OHVs (including Classes I and III, which typically emit higher-pitched sounds) would be allowed under Alternative 4, whereas only Class II OHV use would be allowed under Alternative 2. On the other hand, no OHV sounds at all would emanate from the South Pit area on Tuesdays, Thursdays, and Sundays under Alternative 4; whereas, under Alternatives 1, 2, and 3 OHV sounds could emanate from the pit area on any day of the week.

### ***Little Canyon Mountain***

Under Alternative 4, motorized use at Little Canyon Mountain would be restricted to the hours from 9 a.m. to 6 p.m. on Monday, Wednesday, Friday, and Saturday of each week; whereas, motorized use would be allowed from 9 a.m. until dusk on all days of the week under Alternatives 2 and 3. Thus, compared to Alternatives 2 and 3, there would be more opportunities for quiet recreation between the hours of 6 p.m. and dusk on Monday, Wednesday, Friday, and Saturday of each week under Alternative 4. On Tuesday, Thursday, and Sunday of each week there would be opportunities for quiet recreation at all hours of the day under Alternative 4 that would not be provided under Alternatives 1, 2, and 3. Non-motorized recreationists could visit Little Canyon Mountain on these days and not be impacted by OHV activities; whereas, under Alternatives 1, 2, and 3, non-motorized recreationists could still hear OHV noise on any day of the week, even when physically separated or on a different trail, due to the distance OHV sound can propagate across the landscape. However, fewer OHV recreation opportunities would be available on Little Canyon Mountain under Alternative 4 than under Alternatives 1, 2, and 3.

Under Alternative 4, OHV users might ignore OHV day of week and time restrictions, riding on restricted days and in evenings, particularly during late spring to fall when daylight extends beyond 6 p.m. Some OHV users might stop riding or find other areas on BLM or other lands to ride within the vicinity. Non-motorized users would likely learn to schedule their activities when OHV use is restricted and use more shared use trails. This would expand the range of quality non-motorized recreation opportunities in the area.

Under Alternative 4, higher-elevation routes would have a seasonal OHV use restriction that would limit all OHV use during the winter and early spring months of the year when soils are wettest and most sensitive to compaction, rutting and erosion. Seasonal closures of some trails would increase the intensity of OHV use on trails or routes that remain open year-round. Depending on actual use levels, this increased use might or might



not result in crowding and conflict among OHV users on remaining open trails. The chances for conflicts would be greatest during weekends, holidays, and hunting seasons.

## **Alternative 5**

### ***North and South Pit Areas***

Under Alternative 5, no opportunities for Class I, II, and III OHV use would be available and no OHV sound would be heard emanating from the North and South Pit areas of Little Canyon Mountain because these activities would be prohibited in the North and South Pit areas. The OHV closures and elimination of OHV sound from the North and South Pit areas under Alternative 5 would provide the most benefits of any action alternative to adjacent landowners who are close enough to hear these sounds, but prefer not to, and who may be negatively impacted by other OHV effects such as dust. Any adjacent landowners who are themselves OHV users might be negatively impacted by the loss of OHV recreation opportunities close to their residences. Non-motorized recreationists, such as mountain bikers, might utilize the area and would also benefit from newly available opportunities to ride at the North and South Pit areas without having to compete with OHV users for space on the trails, and without exposure to OHV noise, dust, and the potential for collisions.

Restrictions on OHV use at the North and South Pit areas to certain areas, times of day, days of the week, or types of vehicles under Alternatives 2–5 would require a commitment to enforcement efforts. Greater restrictions would impact those OHV recreationists now utilizing the area who are accustomed to current levels and kinds of access. These recreationists may adapt to changes in OHV management in the North and South Pit areas, be displaced to other areas, or choose to violate use restrictions. Displaced OHV recreationists may go elsewhere on public land or trespass onto private lands for riding opportunities, which could generate additional conflict in those areas. Over time, conflicts are expected to decrease as a result of better differentiation of settings, increased user familiarity with recreation options and use patterns in these settings, and increased management focus on targeted activities and experiences.

### ***Little Canyon Mountain***

Under Alternative 5, all routes on Little Canyon Mountain would be restricted to non-motorized use only. No OHV recreation opportunities would be available. Under Alternative 5, all motorized recreationists who currently ride on Little Canyon Mountain routes would be displaced to other areas, would quit riding, or would violate use restrictions. Use of existing routes on Little Canyon Mountain could be substituted by creation of new unofficial, unplanned routes in other areas, with associated resource impacts and potential conflicts with private landowners. Non-motorized recreation on Little Canyon Mountain would improve more under Alternative 5 than any other alternative, with opportunities to recreate throughout the area at any time without being affected by OHV noise, speed, or dust. Exclusion of fast moving vehicles and motor sounds would increase the perceived naturalness of this recreation setting, and may also result in better opportunities to view birds and other wildlife.

## **Travel Management Effects on Recreation**

A wide range of quality non-motorized and motorized recreation opportunities would result from the interim and final transportation system under Alternatives 2–5. This travel management system would provide more diversity and benefits than Alternative 1 by including designated non-motorized trails, as well as designated routes and trails for motorized Class I, II, and III OHV use that would be managed and maintained to provide public access and different levels of difficulty for different recreation activities.

Alternatives 2–5 would impact hunters in different ways, depending on their preferences and views concerning the use of OHVs to assist in hunting. Use of OHVs makes accessing hunting areas, and retrieval and transport of game considerably easier, but some hunters are concerned that use of OHVs can disrupt hunts and disturb other hunters. Limiting OHV use to designated routes under Alternatives 2–5 would affect those horn hunters and big game hunters that have historically traveled cross-country using Class I, II, and III OHVs. Despite restrictions that would occur under Alternatives 2–5, some hunters may continue to drive their OHVs cross-country, creating more unauthorized routes and trails to get to their hunting locations or retrieve big game. This unauthorized motorized travel off designated routes would increase the need for monitoring and enforcement of restrictions on OHV use, and associated costs.



Limiting OHV-based hunters to designated routes and trails under Alternatives 2–5 is expected to enhance recreation opportunities for non-motorized recreation users who prefer or require quiet public lands to pursue their recreation activity, compared to Alternative 1. Limiting motorized use to designated routes and trails is also expected to provide additional unroaded big game habitat compared to Alternative 1, resulting in a more big game to hunt and higher quality hunting experiences over the longer term.

No motorized road density limits would exist under Alternative 1. The OHV use would not be restricted by potential road density restrictions on 456,610 acres of public land, or 100% of public lands in the plan area. Potential trespass onto adjacent private land and potential conflicts with adjacent landowners would be highest under Alternative 1. Designated routes and trails would not be identified or signed, resulting in OHV users traveling on routes or trails that may be located on private land. Lack of road density restrictions may result in displacement of wildlife in highly roaded areas, thus reducing game hunting opportunities in those areas.

### **Special Designations Effects on Recreation**

Special designations include Wilderness Areas, WSAs, areas identified to protect wilderness character, ACECs, and WSRs. Special designations generally restrict motorized recreation activities to a greater extent than non-motorized, although mountain biking is not allowed in designated Wilderness areas.

The fewest number of special designations would occur under Alternative 1. Other resource BMPs from existing land use plans currently limit motorized recreation use to existing routes in Wild and Scenic River corridors where public motorized access is available. Most motorized recreation use currently occurs outside WSR areas.

No motorized or mechanized recreation use would be allowed in the newly designated 6,497-acre Spring Basin Wilderness Area under any alternative.

Under Alternatives 2–5, motorized and non-motorized use would not be affected by existing or proposed special designations. Class I, II, and III OHV riding or driving opportunities in areas proposed to be designated as ACECs either currently do not exist, or are very limited. All motorized use within Wild and Scenic River corridors would be limited to designated routes.

Most motorized use occurs outside WSAs, except for two-vehicle routes in the Sutton Mountain and Aldrich Mountain Wilderness Study Areas, so additional effects to motorized use would not occur under any alternative. Motorized recreation use in ACECs would be limited to designated routes, so no effects to motorized use would result from ACEC designation. Under any alternative, non-motorized recreation opportunities would continue to be available in special designated areas.

Under Alternative 1, existing WSAs would continue to provide opportunities for non-motorized activities. Motorized recreation use in WSAs and ACECs would continue to be limited to designated routes where motorized recreation use is allowed.

Under Alternative 2, opportunities for non-motorized use in WSAs would be the same as identified for Alternative 1. Opportunities for motorized activities in the lower John Day and Pat's Cabin WSAs would be the same as Alternative 1. Opportunities for motorized activities would be available seasonally on designated routes in the Aldrich Mountain, but would not be available on 2 miles of route in the Sutton Mountain WSA under Alternatives 2–5. Motorized big game hunters would be the primary recreation group displaced due to these two route closures.

Under Alternatives 2, 3, and 5, areas having wilderness character totaling 19,442 acres would provide upland non-motorized recreation opportunities in areas where motorized recreation use is not allowed. Under Alternative 4, there would be 35,457 acres managed for wilderness character, offering these same opportunities for non-motorized recreationists.

### **Back Country Byways Effects on Recreation**

Continued opportunities for driving for pleasure, wildlife and nature study, photography, and other recreation opportunities would be available by management of the existing South Fork John Day River Back Country Byway,



a 50-mile byway paralleling the South Fork John Day River. Designation of the 41-mile Sutton Mountain Road as a BLM Back Country Byway or State Scenic Byway under Alternatives 2–5 would provide additional roadside viewing opportunities along the designated route circling the Sutton Mountain WSA compared to Alternative 1.

### **Aquatic and Riparian Management Effects on Recreation**

The Aquatic Conservation Strategy and riparian BMPs of Alternatives 2–5 may restrict or prohibit motorized and non-motorized use and vehicle routes in riparian areas. These restrictions would be due to water quality, soil erosion, sedimentation, and aquatic resource concerns. Road construction and maintenance for motorized and non-motorized trails and routes may be limited, or may require additional costs over those needed to implement Alternative 1 to meet aquatic and riparian objectives and BMPs. These management guidelines may include altering or closing stream crossings and doing habitat restoration.

Motorized recreation use may be temporarily or permanently affected by seasonal or year-round road or trail closures in all alternatives. Most motorized recreation use in riparian areas is along the North and South Forks of the John Day Rivers and in locations along the main stem of the John Day River by visitors using these areas to camp, fish, hunt, raft, and sightsee. Re-routes to prevent motorized use in creeks would not affect motorized users. However, route closures without alternative routes would displace motorized use in these areas and opportunities to connect to other primitive routes may not occur, resulting in lost motorized opportunities in these situations.

Most recreationists value high water quality and are often drawn to streams and lakes for fishing, boating, camping, and other activities. Thus, despite any short or longer-term restrictions on route access or certain recreation activities, actions that improve water quality and instream flows and that reduce erosion and sedimentation are expected to improve recreation values over the long term.

### **Wildlife Management Effects on Recreation**

Under Alternative 1, motorized recreation opportunities would be least confined by seasonal wildlife restrictions. This alternative has the least amount of seasonal closure acreage, 86,793 acres, or 19% of public lands in the plan area.

Seasonal motorized closures to benefit wildlife would preclude motorized use from November 30 through April 15 on slightly over 331,000 acres of public lands in the action alternatives annually. Thus, compared to Alternative 1, Alternatives 2–5 would reduce year-round motorized opportunities. However, a large portion of these public lands are not accessible to the public due to no legal access, or to OHVs due to deep snow or wet soil conditions during the winter.

Opportunities for wildlife viewing and other non-motorized recreation opportunities may be enhanced by greater seasonal motorized closures under Alternatives 2–5 than Alternative 1, due to reductions in wildlife–OHV encounters. Any improvements in quiet recreation experience quality resulting from reduced motorized recreation access would tend to be situational and hard to generalize. However, it is likely that several types of non-motorized activities would benefit from having larger areas seasonally free of OHV use. Recreation settings may show improved ecological integrity from being subjected to OHV use for a smaller portion of the year, but displacement of OHV users from seasonally closed areas may concentrate use in areas and on routes that remain open year round. Hunters and wildlife viewers should eventually benefit from larger game populations and healthier animals as habitat fragmentation and OHV impacts to wildlife in critical winter feeding areas are mitigated by seasonal closures.

Road density limits under Alternatives 2–5 apply to all roads across public lands (including State, County, and local routes). The effects of implementing road density limits are the same for Alternatives 2–5. Road density limits apply to all lands except those with an Open OHV designation; thus, Alternatives 2 and 3 have approximately 4,000 acres that do not have a road density limit.

The mileage of BLM roads available for motorized recreation use under Alternatives 2–5 would be less than motorized recreation opportunities under Alternative 1 (see Transportation Effects for more details). Current road densities are the highest in Upper John Day and North Fork John Day Areas. Actual identification of roads to



be closed to motorized use would be determined as part of the transportation management plan. However, this potential road reduction may or may not reduce motorized recreation opportunities in these areas.

### **Air Quality Effects on Recreation**

Air quality restrictions are not expected to limit motorized recreation use throughout the plan area due to the generally dispersed nature of motorized use and associated dust production. Under all alternatives, air quality restrictions resulting from OHV use would most likely occur in designated OHV Open areas.

### **Cultural Resources Effects on Recreation**

In areas where site-specific monitoring reveals cultural resource concerns, primitive road or trail construction for recreation use and road or trail rehabilitation and maintenance activities may be restricted. Such areas may also be limited to non-motorized use, closed to all use, or have mitigation measures applied to limit effects of recreation activities on cultural resources under any alternative. Restricting or closing trails or routes would reduce motorized and non-motorized recreation opportunities where these restrictions are implemented.

### **Energy and Mineral Resources Effects on Recreation**

In areas developed for energy or mineral resources, visitor satisfaction could decrease if such development resulted in closures of recreation routes, trails or reductions in site access to provide safe access for specific energy and mineral uses. Long-term mitigation measures could resolve any potential conflicts, such as relocating existing or user-created routes (Alternative 1), or designating motorized or non-motorized recreation primitive routes or trails (Alternatives 2-5) around the energy or mineral resource and associated roads. The effects of trail or route relocation would be similar under all alternatives.

### **Fire and Fuels Management Effects on Recreation**

Recreationists value "natural" settings and within its historic range wildfire is a natural process. Recreationists' tolerance for the effects of wildfire and fuels management activities would be related to their knowledge and views regarding the ecological role of fire and how past management has affected forest ecosystems.

In general, outdoor recreationists prefer settings with green vegetation as opposed to recently burned areas. But many potential ecological benefits of fuels management and prescribed fire also indirectly benefit recreationists, including protection of larger trees, increased biodiversity and ecosystem resilience, less crowded stands, and improved wildlife and game habitat. Shorter-term reductions in access or impacts to esthetic qualities of recreation settings could be offset by longer-term benefits to these settings. Morel mushrooms often fruit abundantly in recently burned areas of dry conifer forests, and some recreational morel collectors actively seek out such areas. Benefits to recreationists that result from less intense prescribed fires, such as increased big game forage and hunting experience quality, may become evident in 2-3 years. Stand-replacing wildfires, however, could have longer term impacts by significantly altering or eliminating valued recreation setting qualities for time periods of several years to decades.

Temporary route, trail, or area closures following prescribed burns or wildfires may be necessary to allow time for these areas to revegetate. Such closures could displace hunters using Class I, II, and III OHVs to other hunting areas. Routes heavily used by fire equipment may be temporarily damaged but could be repaired by post-fire rehabilitation efforts. Fire dozer lines may limit trail or route use by impacting primitive routes or trails used by motorized and non-motorized users, unless damaged routes and trails are rebuilt at the time by fire incident personnel. Providing prompt rehabilitation from fire management activities would minimize long-term loss of motorized or non-motorized routes or trails resulting from these activities.

### **Livestock Grazing Management Effects on Recreation**

For some recreationists, setting and experience quality are reduced by the presence of livestock and to a lesser extent by the visual effects of grazing use. Some of these recreationists may choose to recreate only in areas where livestock are not present and their effects on the landscape are not readily noticeable. Motorized recreation use would not be restricted by grazing management in OHV Open areas. In Limited areas, motorized recreation use may be confined by livestock fenced areas, unless gates and/or cattle guards are installed to allow motorized recreation access between livestock pastures and allotments. If cattle guards are not installed, motorized use



would be confined to areas without fences. Non-motorized recreationists are generally less restricted by fences. Fences can be constructed with openings just wide enough to allow hikers, mountain bicyclists, and perhaps motorcyclists but not livestock to pass through.

## **Lands and Realty Effects on Recreation**

Land acquisitions or exchanges to connect and aggregate existing BLM public land parcels would enhance visual qualities and recreation values of public lands. Greater connectivity of discrete parcels that currently lack public access into larger, more accessible blocks would increase recreation experience quality by providing consistent and stable land use patterns across larger areas, fewer conflicts with private landowners, and more space for dispersed recreation. Larger blocks of land with fewer inholdings of more intensively managed parcels would also benefit big game habitat, and thus hunting experience quality.

Visual qualities would be retained on public lands zoned Z-1 along the main stem of the John Day River, the South and North Forks John Day River, and Dixie Creek; and in Little Canyon Mountain areas, Rudio Mountain, Johnson Heights, and surrounding Sutton Mountain. Alternatives 2-5 have the largest acreage of public lands retained for future management and use, totaling approximately 355,000 acres. There is 70% more public land zoned Z-1 under Alternatives 2-5 than under Alternative 1 (Table 2-23).

A greater number of acres would be zoned Z-3 under Alternatives 2-5 than Alternative 1, so visual qualities may be reduced on these tracts of public land. Alternatives 2-5 have the highest potential for loss of open space through potential disposal of approximately 68,000 acres of Z-3 public land, compared with 40,444 acres zoned Z-3 under Alternative 1, an increase of 79% more public land available for disposal than in Alternative 1.

Generally, land tenure adjustments that aggregate public lands and improve public access would enhance river-based, motorized, and non-motorized recreation use opportunities. In addition, rights-of-way that consider increasing public access would increase the mileage of routes available and increase the quality of recreation opportunities.

The potential loss of BLM public lands with a Zone 3 classification for disposal or sale could eliminate potential OHV Class II technical rock crawling opportunities on public lands north of Highway 19 between Kimberly and Service Creek. Primitive elk and deer hunting opportunities may be lost in the Johnson Heights area and the Rock Creek area east of Condon, if public lands in those areas are exchanged. Recreation and Public Purposes (R&PP) leases on lands near municipalities may decrease or increase motorized or non-motorized recreation opportunities, depending on the type of R&PP lease.

## **Soils Effects on Recreation**

Soils management BMPs under all alternatives may reduce some opportunities for designated OHV Class I and Class III trails and Class II routes in riparian areas. Recreation sites for OHV visitors to camp and use during the day may also be limited to designated sites. Restrictions on route or trail slope may limit or prohibit routes or trails designed for more or most difficult motorized and non-motorized trail users, unless mitigations for preventing soil erosion are part of the designated motorized or non-motorized trail system.

## **Vegetation Management Effects on Recreation**

Timber harvesting and hauling activities and other treatments under all alternatives could reduce both motorized and non-motorized recreation opportunities by causing short-term route or trail closure, and short-term damage or additional maintenance to routes or trails used by motorized and non-motorized recreation users. These treatments may also impact visitor experiences by altering setting characteristics such as remoteness and naturalness. Over the long term, proactive forest and woodland management could increase the quality of recreation experiences to the degree that it promotes aesthetically pleasing, diverse vegetative landscapes that are less vulnerable to uncharacteristically severe wildfires.

Uncharacteristically severe wildfires that alter and replace vegetative stands would leave a more barren landscape with less visual appeal to public land users, tourists, and local residents. The action alternatives provide priority criteria that would direct management to timbered stands to a greater degree than the no action, thus reducing potential impacts to recreationists due to wildfire.



Successful weed treatment over the long term is not expected to affect recreation or cross-country OHV use.

### **Visual Resource Management Effects on Recreation**

The VRM guidelines are expected to enhance motorized and non-motorized recreation route and trail opportunities and contribute to providing quality experiences in a landscape by retaining existing visual quality. Some routes or trails may be relocated or designed to meet appropriate VRM guidelines, helping to ensure landscapes and route or trail systems are aesthetically pleasing to all types of recreation visitors.

### **Public Health and Safety Effects on Recreation**

Providing recreational shooting closures like the one proposed at Little Canyon Mountain would increase public safety for visitors recreating for other purposes in those areas. It would also reduce the potential for visitors to be displaced due to concerns about firearm use. Closures like the one at Little Canyon Mountain will impact a very small proportion of the plan area and numerous opportunities for recreational shooting would still exist. Closure areas would remain open to legal hunting so there would be no reduction in hunting opportunities.

### **Cumulative Effects on Recreation**

Population growth in Oregon and more visitor use coming from western Oregon and other areas outside the state would continue to result in increased motorized and non-motorized recreation use on public lands. This increase would likely be most apparent in the popular Little Canyon Mountain, North and South Forks John Day River, and Rudio Mountain areas.

Although some private landowners currently allow public access across their lands, many do not. As landowners change, there is an increased likelihood that someone will deny public access across their land, reducing public access to public lands not legally accessible. These impacts may be reduced by the BLM and Oregon Department of Fish and Wildlife purchasing public access easements across private lands.

Motorized public access will continue to be more limited over time as the U.S. Forest Service Umatilla, Wallowa-Whitman, Malheur, and Ochoco National Forests develop and implement travel management plans that will generally restrict motorized use more than current travel management regulations for these National Forests.

Motorized and non-motorized recreation opportunities will still be available in various amounts on these forests, helping to meet the regional demand for these activities beyond existing and future opportunities available on BLM public lands in the plan area. The 6,000+ acre Morrow County OHV park will continue to provide Class I, II, and III riding opportunities, helping to provide these experiences in the region.

On BLM lands, seasonal closures, soil guidelines and road density restrictions would eliminate some roads, which would affect motorized recreation users by eliminating year-round motorized recreation use in some areas. Although motorized hunting access would be reduced, big game animals may also be more abundant in unroaded areas, providing more opportunities for big game hunting in the long term and increased non-motorized recreation opportunities such as wildlife viewing, wildlife photography, and other outdoor activities. These opportunities are expected to be enhanced with similar management actions occurring on adjacent U.S. Forest Service and Oregon Department of Fish and Wildlife public lands.

The closure of routes and seasonal use restrictions in Alternatives 2-5 will cause increased recreation use on routes that remain open to motorized use. Increased visitation and motorized use within the plan area would have cumulative effects on BLM's ability to designate, sign, and maintain a final motorized and non-motorized designated route and trail transportation system.

User-created routes and motorized seasonal closures violations are expected to increase over time, especially during big game hunting seasons in the North and South Fork John Day River, Rudio Mountain/Johnson Heights, and Dixie Creek areas. Increased user-created routes in these locations would result from increased OHV regulations that limit OHV seasonally, limit or prohibit OHV use in some areas, or limit the amount and location where designated routes and trails are located.



Other public or private lands may become used for OHV activities by OHV users in locations that may not follow BLM management direction, or may not be acceptable to private landowners.

However, the cumulative effects of OHV restrictions in each of Alternatives 2–5 would reduce the possibility and flexibility to provide, year-round OHV riding opportunities on designated routes and trails that do not conflict with non-motorized trail use, particularly in the Little Canyon Mountain OHV Area. This would be due to various OHV use restrictions that discourage or eliminate some or all types of OHV use.

**Table 4-25. Comparison of the Effects of Management Alternatives on Motorized and Non-motorized Recreation Opportunities and Development on BLM Lands in the Planning Area.**

Indicator	Alternative 1 No Action	Alternative 2 Preferred	Alternative 3	Alternative 4	Alternative 5
Managed Recreation Settings; Primitive; Back Country; Middle-Country; Front Country; Rural	River-based recreation only through John Day WSR Plan. WSA; Primitive; No other managed setting	River: same as Alternative 1. Uplands managed for motorized and/or non-motorized opportunities			
River Opportunities	Managed under the John Day WSR Plan				
Non-Motorized Opportunities	Managed opportunities in WSAs only	More opportunities than Alternative 1			
Cross-Country OHV Opportunities	Greatest opportunities	Less than Alternatives 1, 3; more than Alternatives 4, 5	Less than Alternative 1; more than Alternatives 2, 4, 5	Less than Alternatives 1, 2, 3; no OHV Open Areas	
Designated Route and Trail OHV Opportunities	Fewest opportunities. Users create routes and trails	More than Alternatives 1, 4, 5; less than Alternative 3	Most opportunities of any alternative	Less than Alternatives 2, 3; more than Alternative 1.	
Seasonal Motorized Restrictions	Smallest acreage and number of areas	More acreage and number of areas than Alternative 1			
Road Density Restrictions	None	May restrict motorized use. Exact location and mileage to be determined in 5 years			
OHV Open Area	Most acreage Open	Less Acreage Open than Alternative 1. 3,971-acre Rudio Plateau Open seasonally	Same as Alternative 2, except 598 acre Golden Triangle Open year-round	No OHV Open Area	
Class II Rock Crawl Area	User Created	Designated Areas			
Game Retrieval	Allowed where motorized use is authorized in Open Areas	Allowed on designated routes only. Cross-country use prohibited except seasonally on Rudio Mountain Plateau			
SRMA/ERMA Designations and Recreation Development	1 SRMA; 1 ERMA	5 SRMAs; 3 ERMAs			



Table 4-26. Summary of Effects of Management Alternatives on Motorized and Non-motorized Opportunities and Development in Little Canyon Mountain SRMA.

Indicator	Alternative 1 No Action	Alternative 2 Preferred	Alternative 3	Alternative 4	Alternative 5
<b>Recreation Trail Opportunities</b> OHV Trail System; OHV Class I, II, and III and non-motorized use.	<b>LUP: Open, Interim: Mixed;</b> Fewer opportunities for motorized use due to some OHV trail allocation to non-motorized users.	<b>Mixed;</b> Same as Alternative 1.	<b>Mixed;</b> Same as Alternative 1.	<b>Mixed;</b> Same as Alternative 1.	<b>Limited;</b> Same as Alternative 1.
<b>Daily and Weekly OHV Riding Opportunities</b>	<b>Open 24 hour/day;</b> Most OHV riding time of all alternatives; no time or day constraints.	<b>Use limited to 9 am to 6 pm;</b> OHV riding opportunities reduced to specific hours of the day; no constraints on OHV riding opportunities during day of week.	<b>Use limited to 9 am to dusk.</b> Same effects as Alternative 2.	<b>Use limited to 9 am to 6 pm Mon, Wed, Fri, Sat;</b> Fewest OHV riding opportunities due to reduced to specific hours of the day and specific days of week. Fewest OHV riding opportunities on a daily and weekly basis.	<b>Use limited to 9 am to 6 pm Mon, Wed, Fri, Sat;</b> Same effects as Alternative 4.
<b>Class I, II, and III OHV Use Opportunities</b>	<b>Play Areas:</b> N. Pit-Open to Class I and Class III OHV; No Class II opportunities S. Pit-Open to all OHV; Most OHV riding opportunities of all alternatives.	<b>Play Areas:</b> N. Pit-Use as parking area and trail head; No Class I, II, and III riding opportunities in this pit. S. Pit-Open to Class II OHV; No Class I or III riding opportunities.	<b>Play Areas:</b> N. Pit-Same as existing. S. Pit-Same as existing interim. Same effects as Alternative 1.	<b>Play Areas:</b> N. Pit-Closed; No Class I, II, or III riding opportunities. S. Pit-Same as existing interim; Same effects as existing alternative.	<b>Play Areas: Closed;</b> Most restrictive of all alternatives on OHV use. All OHV use opportunities lost.
<b>General Opportunities</b>	<b>Open;</b> More OHV cross-country riding opportunities available than all other alternatives.	<b>Limited to designated roads and trails;</b> Fewer OHV riding opportunities due to being restricted to designated routes and trails. May be opportunities for technical OHV trails and routes, due to managed and designed OHV trail and route system.	<b>Limited to designated roads and trails.</b> Same effects as Alternative 2.	<b>Limited to Class I and II. Limited to reduced number of roads and trails open to motorized travel.</b> Upper trails subject to seasonal closure. Fewest OHV riding opportunities, due to being restricted to designated routes and trails and seasonal use.	<b>Limited to reduced number of designated roads and trails.</b> Upper trails subject to seasonal closure; Same as Alternative 4.



Table 4-27. Summary of Recreation Management Effects on Public Lands Recreation in the Plan Area by Alternative.\*

Indicators	Alternative 1 No Action. Continue Present Management	Alternative 2 Balances Resource Needs with Access Needs	Alternative 3 Emphasis Commodity and Public Use	Alternative 4	Alternative 5
<b>Recreation Setting</b>	River-based recreation management emphasis and unmanaged motorized and non-motorized recreation emphasis allowing cross-country recreation use.	River-based recreation; same opportunities as Alternative 1. Managed motorized and non-motorized use on designated roads and trails. Recreation emphasis would provide more diversity of motorized and non-motorized recreation opportunities than Alternative 1.	More motorized recreation management emphasis than Alternative 2. All other effects same as Alternative 2.	Less motorized and more non-motorized recreation emphasis than Alternative 2. All other effects same as Alternative 2.	
<b>Special Recreation Management Area (SRMA)</b>	119,052-acre John Day SRMA would provide river based recreation opportunities. No other managed recreation settings in plan area; more conflicts with motorized and non-motorized users in the same areas due to no designated trails separating uses.	Higher quality motorized and non-motorized recreation opportunities within 5 SRMAs totaling 294,580 acres: John Day River, Bridge Creek, North and South Forks John Day River, and Little Canyon Mountain; less conflicts with motorized and non-motorized users through designated trail management.			
<b>Extensive Recreation Management Area (ERMA)</b>	One existing 337,559-acre ERMA; all public lands outside of the existing John Day River SRMA. Long term user conflicts continue.	Three ERMAs totaling 162,252 acres: Rudio Mountain, Dixie Creek and John Day Basin. Reduced user conflicts through designated route management.			
<b>Recreation Developments</b>	15 existing facilities provide access to river and public lands.	15 existing facilities provide access to river and public lands. Up to four new developments; North (2) and South Fork (1) John Day Rivers (1).	Same as Alternative 2, plus 598-acre OHV Open Area in the Golden Triangle and Seasonally Open 3,971-acre Rudio Mountain Areas. More OHV use opportunities over the long term than Alternative 2.	Lower OHV use opportunities than Alternative 2; no OHV use Area Development in the Golden Triangle and Rudio Mountain areas. All other effects same as Alternative 2.	

\*See Appendix K for a more detailed summary of SRMAs.



# Recreation Permits

## Introduction

Analysis of the environmental consequences of the alternatives on recreation permits considered the following key resources or resource uses: Vegetation (noxious weed control), Fire and Fuels, Wildlife, Wild Horses, Lands with Wilderness Characteristics, Special Designations (WSAs, ACECs, and RNAs), Paleontological Resources, Cultural Resources, Recreation Opportunities (special recreation management areas, recreation management, and OHV use) and Travel Management.

Indicators used to compare environmental consequences between alternatives include number of annual commercial permits available and number of commercial, competitive, educational, and organized group permits issued.

## Recreation Permit Indicators

- **Recreation Opportunities:** The types, levels of satisfaction, and amount of area available for various recreation activities. The changes in recreation opportunity by alternative are the same for recreation permits as those discussed under non-guided recreation in general.

## Recreation Permit Assumptions

- The actual number of recreation permits would be determined later.
- The number of available permits includes permits currently administered by BLM within the plan area, as well as permits that are currently unfilled.
- The number of available permits allotted for an activity or use area may be greater or less in number than the current demand for permits.
- Authorized BLM permit holders help protect natural resources because they are held accountable for good stewardship of public lands and they assist the BLM in spreading Leave No Trace and Tread Lightly messages to the general public.
- Requiring upland groups over 12 in number to inquire with the BLM to determine whether a permit is required would allow BLM to discuss resource concerns with the group leader, mitigate these concerns if possible, steer organized groups to areas that can best accommodate their use, and notify groups if a permit is required prior to use of the public lands.

## Analysis of the Effects of the Alternatives on Recreation Permits

Unless discussed below, actions proposed under any alternative would have no measurable effect on recreation permits at the planning scale.

### Vegetation Management, Noxious Weed Control, Fire and Fuels Management, and Wild Horse Management Effects on Recreation Permits

Under all alternatives, treatments to restore and rehabilitate public lands would increase commercial recreation opportunities in the long term by improving the condition of the public lands, but may result in temporary disruption to some commercial activities or use areas.

### Wildlife Management Effects on Recreation Permits

Under all alternatives, seasonal road closures would have the same effect on recreation permits as on recreation in general.

### Special Designations (WSAs, ACECs, RNAs) Effects on Recreation Permits

All special designations include management actions designed to protect resources or experiences. These management actions include restrictions on guided and/or non-guided recreation activities in areas containing



these resources. As a result of these actions, the number and type of permits issued would be reduced most under Alternatives 2, 3, and 5, less under Alternative 4, and least under Alternative 1.

### **Lands with Wilderness Characteristics and Paleontological and Cultural Resources Effects on Recreation Permits**

Existing management designed to protect paleontological and cultural resources to be continued in all alternatives would continue existing restrictions on guided and/or non-guided recreation activities in these areas. Additional management designed to protect wilderness characteristics in Alternatives 2–5 would include restrictions on guided and/or non-guided recreation activities in these areas.

### **Special Recreation Management Areas Effects on Recreation Permits**

Existing management goals identified for the John Day River SRMA to be continued in Alternative 1, plus management goals identified for additional SRMAs and ERMAs in Alternatives 2–5 would be factors the BLM considers when evaluating a proposal for a commercial recreation permit. To be considered, a permit proposal must be in compliance with management goals for the SRMA or ERMA where the activity is proposed.

### **Recreation Management Effects on Recreation Permits**

Continuing the existing moratorium on new commercial permits in Alternative 1 would not address the backlog of permit requests that BLM has received and continues to receive for the plan area. Discontinuing the moratorium in Alternatives 2–5 would create opportunities for new annual upland-based commercial permits as the BLM addresses the backlog of NEPA analyses required for permit issuance. The availability of new upland-based commercial permits would provide more options for recreation users to participate in guided recreation activities authorized by the BLM, provide increased (but not unlimited) business opportunities for those wishing to offer a guide service, and help address unauthorized guiding on BLM lands by making legal alternatives available.

Criteria and objectives under Alternatives 2–5 increase the risk of future decisions limiting the number or type of commercial permits available in a given area and/or place restrictions on the permitted use such as number of use days, group size, area of use, or mode of transport. Permit availability may be limited by the BLM's ability to administer and monitor permits. The availability of upland-based commercial permits would be expected to gradually increase from the current level of 12 (includes 9 unfilled bighorn sheep guiding permits) to approximately 35.

### **Wild and Scenic River Management Effects on Recreation Permits**

The existing management of the Wild and Scenic River Plan is carried forward under all alternatives. The change to recreation permits follows the general recreation effects by alternative.

### **Travel and OHV Management Effects on Recreation Permits**

Existing travel management actions to be continued in Alternative 1, plus additional travel management actions as proposed in Alternatives 2 and 3, would have the same effect on recreation permits as on recreation in general.

### **Cumulative Effects on Recreation Permits**

With an increasing central Oregon population and the accompanying popularity of recreating within the plan area, there is likely to be an increase in the demands for permits, thereby increasing the need for BLM to process, administer and monitor permits.



# Access and Travel Management

## Introduction

Analysis of the environmental consequences of the alternatives on access and travel management considered the following key resources or resource uses: Soils, Vegetation Management (forestry), Fire and Fuels Management, Aquatic Resources, Wildlife, Visual Resources, Special Designations (ACEC), Livestock Grazing, and Recreation Opportunities (OHV use).

The following indicators were used to compare and assess the effects: miles of interim roads, miles of roads closed, miles of interim road seasonally open, miles of interim roads open year round, and average road densities across BLM lands. The assumptions underlying these indicators are described below.

## Access and Travel Management Assumptions

- The interim transportation system would be managed and maintained until the completion of a Transportation Plan within 5 years of the ROD for this RMP.
- Within WSAs and areas being protected for their wilderness characteristics, motorized use is either closed or limited to designated routes to protect the wilderness characteristics of these areas. Wilderness legislation prohibits mechanized travel within a wilderness area. When a WSA is designated by Congress as Wilderness, existing routes within that area would be closed to mechanized travel and are not available for transportation network.
- Not all public land can be legally accessed by the public (e.g., Federal lands that are landlocked by private landowners without any public access routes or easements). Road mileage calculations do not always differentiate between mileage with or without legal public access.
- Across BLM land within the plan area, there are 109 miles of roads whose jurisdiction is outside of BLM's control. These routes belong to the state, county, or another agency and the public can use them to access public land; they are only used for cumulative effects analysis.
- Routes with administrative easements across private lands are closed to public access.
- Most right-of-way routes and public easement routes are open for public use without seasonal restrictions.
- Road closure proposals not currently identified in this planning document would undergo additional environmental review with associated public input.
- The BMPs would be utilized for construction, rehabilitation, maintenance and general management of the transportation system (Appendix B). These BMPs would be consistent across all alternatives.
- The BMPs for the following resources would have no measurable impact on the transportation system: Weeds, Special Designations, Vegetation, Aquatic Resources (Fisheries).
- Average Daily Traffic (ADT) is the summation of the number of trips in and the number of trips out of an area.
- Reserved Forage Allotments (RFA) will be treated as open allotments when analyzing impacts to the transportation system. An isolated grazing allotment is one that requires traveling across a private land holding to gain access (i.e., no administrative easement across the private land holding).

## Analysis of Effects of the Alternatives on Access and Travel Management

### Effects Common to All Alternatives

Proposed management of the following resources and resource uses would not have measurable impacts to Access and Travel Management: Wild Horses, Lands with Wilderness Characteristics, Cave Resources, Special Designations (WSRs), Native American Uses, Paleontological Resources, Cultural Resources, and Recreation Opportunities (visitor services) at the planning scale.



## Access and Travel Management Effects on Access and Travel Management

Under Alternative 1, continuation of current transportation system would have no new effects on maintenance or degree of public access.

Alternatives 2, 4, and 5 would be based on meeting resource goals and objectives, while balancing cultural, ecological, and social and economic values. There would be 86 miles of BLM road that would continue to be maintained for passenger vehicles. In addition, 109 miles of primitive routes would receive minimal maintenance, as needed, and would limit motorized access to high clearance/4x4 vehicles. Only 5 miles of new road construction are proposed, and 36 miles of road would be permanently closed for hydrologic concerns. Approximately 46 miles of road would be identified for pursuing easements to gain access to large blocks of landlocked public lands.

Under Alternatives 2, 4, and 5, there would be 409 miles of roads (55%) not designated as part of the interim transportation system, effectively reducing access to public lands. However, 241 of the 250 miles to be closed are short segment routes that are landlocked by private land holding with no public access rights. This results in 27% of existing routes being closed to the public until a Travel Management Plan can be completed.

Under Alternatives 2, 4, and 5, the interim road system meets the road density limits for 5 of 6 subareas (Table 4-28) and would allow routes to be added for OHV trails, rights-of-way, and other uses in all subareas except the Upper John Day. In the Upper John Day, the road density would need to be reduced on average by 0.40 miles per square mile, or approximately 6 miles.

Alternative 3 emphasizes recreation and public uses of public lands. Approximately 137 miles of currently closed routes would be reopened in the North Fork John Day area as part of the interim transportation system. Increased access could increase as well as maintenance costs in the North Fork John Day area. Under Alternative 3, there would be 662 miles of primitive routes that would receive minimal maintenance on an as-needed basis, which would limit motorized access to high clearance/4x4 vehicles. The miles of roads maintained for passenger vehicles, miles of proposed easements and miles of road proposed for construction would be the same as Alternative 2. Route closures would be limited to WSAs and routes identified as hydrologic concerns. The total mileage of roads proposed for closure due to hydrologic concerns is 36 miles. Similar to the existing situation, Alternative 3 would have over 250 miles of road only accessible through private lands without public access; trespassing across private lands would continue as the public tries to access public lands. This may also lead to private landowners locking off their property and effectively closing access to public lands.

For the final transportation plan, Alternative 3 would be similar to Alternative 1 in the North Fork John Day area, except it would require modifying which roads are reopened to meet road density requirement. Instead of reopening 137 miles in the North Fork John Day area, the amount would be 103 miles or less. In Lower John Day, South Fork John Day and Rudio Mountain subareas, additional routes could be added for OHV trails, rights-of-way, and other uses.

**Table 4-28. Road Density Values by Alternative for Six Subareas Within the Plan Area, Along With the Average Prescribed Road Density Limits (mi/mi<sup>2</sup>).**

Subarea	Average Prescribed Road Density Limit		Existing Road Density Alternative 1	Proposed Road Density	
	Alternatives 2, 3, and 5	Alternative 4		Alternatives 2, 4, 5	Alternative 3
Upper John Day	1.48	1.48	3.5	1.5	3.5
Lower John Day	1.17	1.17	1.2	0.4	1.1
North Fork John Day	1.83	1.83	0.6	0.8	2.3
Rudio Mountain	1.81	1.63	1.4	0.4	1.4
South Fork John Day	1.65	1.39	1.7	0.6	1.6
Sutton Mountain	0.96	1.48	1.3	0.7	1.3



## Fire and Fuels Management Effects on Access and Travel Management

Routes heavily used by fire equipment are likely to be temporarily damaged; however, fire rehabilitation efforts would correct damaged roadbeds. During prescribed fires and wildfire containment, some routes would likely be temporarily closed to the public, or temporarily opened to assist in firefighting efforts.

Under existing management (Alternative 1), fuels treatments would be applied to 3,600 acres annually, resulting in short-term traffic increases on 8 miles of road annually.

Alternatives 2, 4, and 5 have a full range of appropriate response (including fire to achieve resource objectives) available for areas outside of WUI. The impacts to the transportation system would vary. When the appropriate response is to monitor or point control, impacts to routes would be minimal. When the appropriate response is perimeter control or full suppression, road use and public safety concerns during fire suppression activities may cause temporary closure or temporary opening of closed routes. There are 706 miles of roads within the 434,306 acres of appropriate response zone. The management of wildfires within the 85,391 acres of designated WUI areas would not change, nor would the impacts to the 139 miles of roads within the WUI. Fuel treatments would occur on 5,400 acres annually, resulting in short-term traffic increases during fuel treatment activities on 9 miles of road annually.

## Cultural Resources Effects on Access and Travel Management

For Alternative 1 and the action alternatives, areas where site-specific monitoring reveals cultural resource concerns, road construction, rehabilitation and maintenance activities are likely to be restricted or mitigation measures applied to the activity.

## Energy and Minerals Leases Effects on Access and Travel Management

For Alternative 1 and the action alternatives, areas developed for energy or minerals (including leasable, locatable, and salable minerals); there exists the potential for site-specific access needs. A right-of-way would be provided and the BLM would dictate the location and design standards for these routes. The action alternatives would have less area unconstrained for energy development than Alternative 1 (Table 2-14), and thus may result in fewer site-specific actions related to access.

## Lands and Realty Effects on Access and Travel Management

For Alternative 1 and the action alternatives, potential land acquisition could add road mileage to the system, while land suitable for disposal could reduce the road mileage. In addition, the granting of rights-of-way could increase the mileage of routes available across public land. The BLM would dictate the location and design standards for any right-of-way road permit. Many of the right-of-way permitted roads are maintained by lessees. Recreation and Public Purposes (R&PP) leases on lands near municipalities may decrease the mileage of routes available for public use.

## Livestock Grazing Management Effects on Access and Travel Management

Traffic associated with daily grazing management activities is estimated at two vehicles per day Average Daily Traffic (ADT) per allotment during the grazing period for each road that accesses an allotment. For every isolated grazing allotment that is closed, the ability to access these allotments for other management purposes is eliminated. In many cases, only administrative access to these tracts of land would be available because of the grazing allotment. As grazing leases are renewed, there would be an opportunity to allow the grazing lessees to maintain BLM roads as a stipulation to the lease.

Under current management (Alternative 1), 221 allotments are open and 9 allotments are closed. For these allotments, the truck-hauling traffic is estimated at 221 round trips per year on the roads accessing the allotments. Currently only one allotment is open in the North Fork John Day area, which has negligible impact on traffic in the area.

Under Alternative 2, up to two grazing allotments in the North Fork John Day would have the potential to be leased as Reserve Forage Allotments (RFA). As a result, truck-hauling traffic would see minor increases of up to four round trips per year on the roads in this area. Daily grazing management activities would increase local traffic counts to the area. The ADT increase during the grazing period would be approximately 4 vehicles per day



on the North Fork John Day Road and less on the side roads. The increase in traffic, especially during wet periods, would cause additional damage to the roads and result in increased maintenance needs.

Under Alternative 3, up to 10 grazing allotments in the North Fork John Day would be leased. As a result, truck-hauling traffic would see minor increases of up to 20 round trips per year on the roads in this area. Daily grazing management activities would increase local traffic counts to the area. The ADT increase during the grazing period would be approximately 20 vehicles per day on the North Fork John Day Road and less on the side roads.

Under Alternative 4, an estimated 145 of the 210 allotments would have the potential for closure if the permits are relinquished. Traffic would decrease by two ADTs for every grazing allotment closed. Road maintenance would decrease as would the number of cooperative agreements to allow grazing lessees to maintain BLM roads.

### **Soils Effects on Access and Travel Management**

Under Alternative 1, the Best Management Practices recommended for road maintenance and construction activities are not specific to the plan area, so they may not be effective in minimizing excess erosion. Under this alternative, 253 miles of roads are classified as having excessive erosion (0.75 pounds per foot average annual erosion rate).

Under the action alternatives, roads with excessive erosion would receive rehabilitation, decommissioning, or obliteration when any new roads are constructed. Best Management Practices and guidelines would be tailored to the plan area and would minimize erosion. For interim routes, maintenance intensities would temporarily be adjusted on these routes to a level where excessive erosion can be controlled and maintained at acceptable levels.

In Alternatives 2, 4, and 5, only 19 miles of the interim road system have excessive erosion. The other 234 miles of roads with excessive erosion are not part of the designated interim system and may not require any further actions beyond closing the road.

In Alternative 3, there would be 132 miles of the interim road system that would have excessive erosion. Like the other action alternatives, roads that are not part of the designated interim system may not require any further actions above closing the road.

### **Areas of Critical Environmental Concern (ACEC) Effects on Access and Travel Management**

Within Alternative 1, there are 6,332 acres designated as ACECs. There are approximately 10 miles of roads within these ACECs. Traffic within these areas is restricted to the designated roads. This restriction has had minimal impact to the maintenance of these roads.

Under the action alternatives, the area proposed for ACEC designation would be increased to 68,404 acres. Within the boundaries of these proposed ACECs are 111 miles of roads where traffic would be restricted to the designated routes. Maintenance and construction of roads within ACEC boundaries is likely to be restricted by the VRM classification of the individual ACEC. Rights-of-way for private land-holding access would be restricted to existing routes and allow the BLM to have the right-of-way holders maintain these roads.

### **Visual Resources Management Effects on Access and Travel Management**

For Alternative 1, Table 4-29 shows the acreage of existing VRM Classes within the plan area and the mileage of roads within those areas. Very limited road maintenance activities are allowed in VRM Class I. In VRM Class II, road maintenance and construction activities cannot attract attention and changes cannot be evident in the character of the landscape. In VRM Class III, road maintenance and construction can occur, but its evidence is subordinate to the character of the landscape. In VRM Class IV, road maintenance and construction activities are allowed.

For the action alternatives, Table 4-30 shows that across the landscape, the only changes in VRM class would be within the acquired lands of the North Fork John Day area and likewise, the only impacts to the transportation systems would be for those roads within this area. VRM in Alternative 4 varies slightly due to additional areas managed for protection of wilderness character; however, there are no roads in these areas.



**Table 4-29. Existing Visual Resource Management (VRM) Classes and Road Miles Within VRM Class.**

VRM Classes	BLM Acreage within Plan Area	BLM Road Miles within VRM Class
I	95,893	158
II	103,645	0
III	174,989	0
IV	82,306	136

**Table 4-30. Visual Resource Management (VRM) Classes and BLM Road Miles Within VRM Classes for the Action Alternatives.**

VRM Classes	BLM Acreage within Plan Area	BLM Road Miles within VRM Class
I	95,893	158
II	160,199–164,574	237
III	150,994	266
IV	49,285	82

### Recreation Opportunities Effects on Access and Travel Management

Under Alternative 1, there are 337,559 acres designated as ERMA, with no impacts to the 658 miles of road within this area. There is currently only one SRMA. The Lower John Day River SRMA is 119,052 acres and includes the Spring Basin, Thirtymile, North Pole Ridge, and Lower John Day WSAs. Within this SRMA, all traffic is limited to designated roads and trails and no cross-country travel is allowed. Using a reduced road density of 0.5 mile per square mile to account for the large roadless areas within the WSAs, travel is currently limited to approximately 93 miles of road.

With implementation of benefits-based recreation criteria for the action alternatives (see Recreation, Chapter 2), the level and type of access available for public use would vary based on the setting for each SMRA. In the 104,954 acres designated as a Primitive setting, no new roads would be constructed. These areas are roadless. In the 29,500 acres (in Alternatives 2, 3, and 5) and the 37,511 acres (in Alternative 4) designated as Back Country setting, there are 42 miles of existing routes that if not already closed could be converted to non-motorized trails. New construction would be limited to trails. Road rehabilitation, construction, and maintenance activities are allowed in Middle Country, Front Country, and Rural settings. These three settings allow for motorized access. In the 155,011 acres (in Alternatives 2, 3, and 5) and 147,000 acres (in Alternative 4) designated as Middle Country, the 355 miles of roads are more primitive. Typically, these minimally maintained primitive routes have native surface and are passable to high clearance 4x4s and OHVs. The 8 miles of roads through Front Country (1,949 acres) and Rural (2,617 acres) settings range from primitive roads to those that are maintained to be passable to passenger vehicles.

For Alternative 1, continuation of existing OHV management would have no new effects on the maintenance and degree of public access. Currently, 234,272 acres are designated as Open, which allows the user to travel anywhere within that area. Within the 155,228 acres designated as Limited, OHV use is concentrated on 213 miles of roads. Only 67,332 acres are currently closed to OHV use, amounting to 109 miles of roads experiencing no use.

In Alternative 2, OHV users would be allowed off-road on 3,971 acres in the Rudio Mountain area. Within this open area, 14.9 miles of roads would have less deterioration from use as travel is dispersed across the landscape rather than being concentrated on the roads. Elsewhere within the planning area, maintenance needs would increase for 384 miles of roads resulting from concentrated OHV use. There would be 138,732 acres closed to OHV use, amounting to 138 miles of roads that would experience no use. With the reduction in Open designated areas, the number of OHV user-created routes would decrease across the landscape.

Alternative 3 is similar to Alternative 2 with the exception that an additional 600 acres would be designated as Open.



In Alternative 4, only two acres are designated as Open, reducing the likelihood of user-created routes to a no effect on the transportation system. The area designated as Limited is essentially the same as Alternative 2. The acres designated as Closed would increase to 155,325 acres resulting in 149 miles of roads with no OHV traffic.

In Alternative 5, there would be no lands designated as Open to OHVs. The Limited designated land would increase to 315,020 acres resulting in concentrated use on 604 miles of roads. Maintenance needs would increase for 391 miles of roads resulting from concentrated OHV use. The amount of closed roads would be the same as Alternatives 2 and 3. In the Little Canyon Mountain area near John Day, Oregon, 2.3 miles of road would be limited to highway legal vehicles only. Motor vehicles that are not highway legal would not be able to utilize any of the interim routes in this area, but would be able to utilize other interim routes within the planning area.

### **Vegetation Management (Forestry) Effects on Access and Travel Management**

The identified haul routes associated with individual forest products sales would increase traffic, particularly traffic associated with the timber harvest activities. Impacts related to this increased traffic are typically offset by requiring the purchaser to either improve the road prior to hauling activities and/or maintaining the road throughout the hauling activities.

Currently under Alternative 1, the existing allowable timber cut is 3.58 mmbf per year and the estimated traffic volume associated with hauling these forest products is 796 round trips. For the action alternatives, the allowable cut is 2.54 mmbf per year. The estimated traffic volume associated with hauling is 565 round trips and traffic would decrease by 231 round trips; likewise, the maintenance needed on the designated haul routes would decrease.

### **Wildlife Management Effects on Access and Travel Management**

Alternative 1 would have 45 miles of roads with seasonal closures for wildlife. These roads are mostly in the South Fork John Day, North Fork John Day, and Battle Creek areas. Under the action alternatives, seasonal wildlife closures would apply to all routes, except the following collector roads: Franks Creek, Holmes Creek, South Fork John Day, Priest Hole, Deer Creek, Sunflower Creek, Murderer's Creek, and Indian Creek. With no traffic between December 1 and March 31, maintenance needs would decrease. Mitigation measures and seasonal work windows would be applied to construction and maintenance activities as needed. In Alternatives 2, 4, and 5, there would be 138 miles of roads (41% of the designated interim routes) open seasonally. In Alternative 3, there would be 475 miles of roads (54% of the designated interim routes) open seasonally.

### **Aquatic Resources Effects on Access and Travel Management**

Activities conducted to protect aquatic habitat (e.g., altering or closing stream crossings and habitat restoration) are likely to temporarily or permanently affect public access and road maintenance. Under Alternative 1, the current PACFISH objectives would provide guidance on these road-related activities.

Under the action alternatives, 36 miles of roads would be closed to motorized public use due to hydrologic concerns. In addition, when the ACS decision tree is applied to individual roads, there is likelihood that some roads would require rerouting or upgrading to protect aquatic concerns. A route closed to motorized use due to hydrologic concerns may still provide non-motorized public access to the area.

### **Wilderness Characteristics Protection Effects on Access and Travel Management**

Under Alternative 4, approximately 2.5 miles of future proposed road construction within Rudio Mountain would be eliminated because 1.3 miles of this road would be located within lands where wilderness characteristics are to be protected. By eliminating this segment of road, the BLM will not be able to provide a contiguous public access route between Franks Creek and Holmes Creek Roads. With the allowable road density held at 0 miles per square mile in areas with wilderness characteristics protections, the prescribed road density standards are lower for the Rudio Mountain (10% lower) and South Fork John Day (16% lower) sub areas, thus reducing the miles of routes that can be developed in these sub areas.



## Summary of Effects on Access and Travel Management

In all alternatives a portion of the transportation system could only be accessed by obtaining permission from adjacent landowners. Without public easements across these private lands, there would be no legal access to the public lands for the general public.

Under Alternative 1, the transportation system would continue to be managed by current practices. Maintenance and construction activities are controlled by resource BMPs. The transportation system includes 250 miles of roads with no legal access and 45 miles of seasonally opened roads. There are 475 miles of roads classified as primitive that are only accessible to high clearance vehicles.

In the action alternatives, the identified transportation system is an interim system only. A Transportation Management Plan would be developed 5 years after this RMP is completed to address the final transportation system on a site-by-site basis. The determination of which roads are part of the final transportation would be based on the criteria listed in Chapter 2, while remaining within the average prescribed road density limit. In addition, the BLM has identified desired road easements to gain more public and administrative access to public lands. These future road easements would depend on the willingness of private landowners to enter into access agreements.

Alternatives 2, 4, and 5 would have reduced road access and lower maintenance costs when compared to Alternative 1. Roads that did not have legal access were not included in the interim transportation plan which accounts for the reduced access and decrease in maintenance. Average road density standards are lower than the existing road densities.

Alternative 3 would be similar to the current level of access and maintenance, except more miles of road would be under seasonal use restrictions from December through April. Many of these routes are snowed-in during this time frame. The increase in the mileage of interim routes available for public access is the result of lifting some of the closures in the North Fork John Day area. Average road density is similar to Alternative 1, except in the North Fork John Day area.

## Cumulative Effects on Access and Travel Management

Population growth in central Oregon and the Willamette Valley, as well as more interest in OHV and mechanized vehicle use, recreation, and tourism, could result in increased motorized use of the plan area in the reasonably near future. Increased visitation and motorized use within the plan area would have cumulative effects on transportation including higher maintenance costs, increased route closures, monitoring and mitigation actions, and more traffic rule enforcement. If maintenance funding is reduced, then the frequency of maintenance that these routes receive would likewise be reduced. In some cases, this reduced level of maintenance may restrict the type of vehicles that can safely travel on a particular route.

The closure of routes and seasonal use restrictions in Alternatives 2, 3, 4, and 5 would cause increased traffic on non-restricted routes and would result in higher maintenance associated with these routes. Routes across private lands that have traditionally been used by the public are continuing to be closed by private landowners due to damage to private lands or change of ownership, thus increasing use on other routes. Likewise, the adjacent National Forest lands are changing their travel management by restricting all motorized use to designated routes or Open areas. Without the opportunity for Open cross-country use, the number of user-created routes would be reduced. With the majority of the traffic being concentrated on a smaller transportation system, wear and tear on roads, such as those that connect with National Forest roads, would increase as would the associated maintenance costs.

Protection of resources dictates increased management, which inevitably requires stricter controls on access and user numbers, thus minimizing cumulative effects in some areas and concentrating effects on the major collector routes. Implementation of BMPs for transportation actions (Appendix B) should also minimize cumulative effects within the plan area under all alternatives.

Acquiring additional road easements to provide public access to land-locked public parcels would provide short-term relief to increased visitation in some areas. In the long term, however, the cumulative effects of these additional roads on transportation would include higher maintenance costs, increased route closures, monitoring and mitigation actions, and more traffic rule enforcement.



## Energy and Mineral Resources

This analysis examines the availability, quantity, and abundance of energy and mineral resources under each alternative relative to demand.

### Energy and Mineral Resources Indicators

- **Acres of land that would be available, avoided, or excluded from wind energy development.** An interdisciplinary team identified areas where resource uses or values can be adequately protected with terms and conditions and classified those areas as 'available.' Terms and conditions would be selected to meet RMP objectives. The team then identified areas where resource uses or values could conflict with wind energy development, and wind energy and development should be avoided. However, in these areas it may be possible to allow wind energy development with additional terms and conditions for the identified resource uses and resources. Terms and conditions would be selected to meet RMP objectives and the protections listed in Table 2-14. Finally, the interdisciplinary team identified areas where other resource uses or values cannot be adequately protected with even the most restrictive terms and conditions. Appropriate protection can be ensured only by excluding these lands from wind energy development. A GIS analysis of the available, avoided, or excluded areas were compared to areas with various wind energy potential and used as an indicator of the effects to potential wind energy development by alternative.
- **Acres where mineral material disposal (salable) would be available, avoided, or closed.** An interdisciplinary team identified areas where mineral material disposal could occur and resource uses or values can be adequately protected with stipulations. Those areas were classified as 'available.' Stipulations and BMPs would be selected to meet RMP objectives. The team then identified areas where resource uses or values could conflict with mineral material disposal and should be avoided. However, in these areas it may be possible to allow mineral material disposal with additional stipulations for the identified resource uses and resources. Additional stipulations would be selected to meet RMP objectives and the protections listed in Table 2-14. Finally, the interdisciplinary team identified areas where mineral material disposal cannot occur because other resource uses or values cannot be adequately protected with even the most restrictive stipulations. Appropriate protection can be ensured only by excluding these lands from mineral material disposal. A GIS analysis of the mapped resource uses and values were compared to areas with various mineral materials potential and used as an indicator of the effects to mineral material availability across the plan area.
- **Acres where leasable (including geothermal) solid and fluid minerals would be available, avoided, or closed.** An interdisciplinary team identified areas where leasing could occur and resource uses or values can be adequately protected with terms, conditions and stipulations. Those areas were classified as 'available.' Terms, conditions, stipulations and BMPs would be selected to meet RMP objectives. The team then identified areas where resource uses or values may conflict with leasing and should be avoided. However, in these areas it may be possible to allow leasing with additional terms, conditions, and stipulations for the identified resource uses and resources. Additional terms, conditions, and stipulations would be selected to meet RMP objectives and the protections listed in Table 2-14. Finally, the interdisciplinary team identified areas where leasing could not occur because other resource uses or values cannot be adequately protected even with the most restrictive stipulations. Appropriate protection can be ensured only by excluding these lands from leasing. A GIS analysis of the mapped resource uses and values was compared to areas with leasing potential and used as an indicator of the effects to leasable mineral availability across the plan area (geothermal, oil, and gas).
- **Acres where locatable mineral mining would be available, avoided, or closed via withdrawal.** An interdisciplinary team identified areas where locatable mineral mining can occur and resource uses or values can be adequately protected with terms, conditions, and other special considerations. Those areas were classified as 'available.' Terms, conditions, and BMPs would be selected to meet RMP objectives. The team then identified areas where resource uses or values may conflict with locatable mineral mining and should be avoided. However, in these areas it may be possible to allow locatable mineral mining with additional terms, conditions, and additional considerations for the identified resource uses and resources. Additional terms and conditions would be selected to meet RMP objectives and protections listed in Table 2-14. Finally, the interdisciplinary team identified areas where locatable mineral mining



is unsuitable because other resource uses or values cannot be adequately protected with even the most restrictive stipulations. Appropriate protection can be ensured only by withdrawing these lands from locatable mineral exploration or development. A GIS analysis of the mapped resource uses and values were compared to areas with various locatable mineral potential and used as an indicator of the effects to locatable mineral availability across the plan area.

## Energy and Mineral Resources Assumptions

- The wind energy development allocations are coincident with rights-of-way allocations. As a result, rights-of-way restrictions should not limit wind energy development.
- Over the last two years, interest in wind energy development has expanded due to improvements in technology and increasing demand. As a result, even areas with only 'fair' wind energy potential may be developed in the future.
- For analysis purposes, it is assumed that adjacent ownership on isolated parcels would allow access for wind energy development. In addition, it is assumed that development on areas available for wind energy development would be developed in conjunction with agreements with state and local governments.
- The analysis of energy and mineral (locatable, leasable, salable, and geothermal) availability is to display effects of the alternatives. Site-specific decisions on energy and minerals will follow guidance from Chapter 2 and site-specific information on resources and mineral and energy potential.

## Analysis of Effects of the Alternatives on Energy and Mineral Resources

### Effects Common to All Alternatives

All five alternatives would maintain similar levels of availability and quantity of energy and mineral resources. Under all alternatives, mineral and energy resources on public land within the plan area would generally be abundant relative to the anticipated demand. With the new emphasis on renewable energy, an increase of application for wind energy development and geothermal energy is possible.

Under federal law and BLM policy, all public lands are open for energy and mineral exploration and development, unless specific lands are excluded, closed, or withdrawn from mineral entry. An example of such a withdrawal is the establishment of a federal wilderness such as Spring Basin Wilderness. All five alternatives would provide opportunities for new exploration for all types of minerals. Despite some differences between alternatives in constraints on mineral and energy development (Table 2-14), most of the plan area would remain open to mineral entry. Such entries would be subject to certain restrictions as required by law, land use plan compliance, or as a result of decisions supported by site-specific environmental analysis.

### Locatable

The BLM has subsurface ownership of over 1.9 million acres in the plan area. Of this acreage, the BLM only manages the surface of 158,437 acres. Under all alternatives, almost all BLM's locatable minerals would remain available for the location of mining claims under the mining laws, but most on-the-ground mining activities near riparian areas would require site-specific review by an interdisciplinary team to determine if the proposed impacts would meet ACS standards. Where BLM manages the surface and subsurface locatable minerals, approximately 80% of the high potential areas are available for mining under all alternatives. Current levels of mining could be accommodated under all the alternatives. With possible national, local, and regional market changes, additional removal of material could occur in the areas allocated for mineral use.

### Leasable

Under all alternatives, almost all oil, gas, and geothermal energy would continue to be available for leasing and the exploration and development.

Although prices for oil and gas are expected to continue to rise relative to the costs of exploration and development, the actual physical occurrence of oil and gas in most parts of the plan area is speculative and largely



dependent on results of current exploration drilling occurring in south-central Washington. A few federal oil and gas leases have been issued within the plan area since the current resource management plans were adopted from 1986 through 1989. Lands in the central portion of the plan area follow the Blue Mountain Anticline (see Chapter 3) and have the best potential to attract leasing and exploration interest for conventional oil and natural gas deposits. However, there were no bids on the plan area leases offered in 2009.

### **Wind Energy**

All action alternatives were developed in consideration of the National Wind Energy Programmatic EIS and decision document (USDI 2005f). This document addressed wind energy development, including adoption of the programmatic policies and BMPs. The BLM followed programmatic decisions to provide for wind energy development and to identify minimum requirements for mitigation measures. The Record of Decision also states that right-of-way authorizations will not be issued for wind energy development on lands where wind energy development is incompatible with specific resource values. The plan area restrictions developed by an interdisciplinary team are displayed in Table 2-14 and vary from 'avoid' to exclude.

Although approximately 93% of the BLM land in the plan area has only poor to marginal wind energy potential, 7% has 'fair' to 'superb' wind energy potential. Of the BLM's 21,111 acres with at least 'fair' wind energy potential, Alternative 1 allocates 13,410 acres and the action alternatives allocate 8,475 acres as available for development. The action alternatives slightly reduce the area available for wind energy development based on the findings of resource impacts that cannot be mitigated, and adds plan area specific terms and conditions. Over the life of the plan, project-specific analyses would focus just on the critical, site-specific issues of concern.

### **Salable**

Under all five alternatives, common varieties of rock would continue to be available. Approximately 35-40% of the BLM lands with high potential for salable mineral development would be existing or new mineral material disposal. The action alternatives include additional BMPs, mitigations, and guidelines designed to meet other resource and resource use objectives.

Within the plan area, there are several existing quarries for common variety minerals. It is assumed that few of these quarries would be depleted over the life of this plan and therefore do not need replacement. A few quarries may be closed, reclaimed, or potentially replaced by new sites. Demand for common variety material is closely correlated with population growth and road maintenance needs. The expansion of some existing quarries or the opening of new sites may be allowed if circumstances change, demand outpaces current supply, and RMP objectives for other resources and uses are met.

## **Cumulative Effects on Energy and Mineral Resources**

Site-specific and/or quantitative analyses of cumulative effects are not possible due to the uncertainty of when and where mining operations or energy production would be authorized within lands open to that use. Under the current administration, renewable energy development is strongly supported but includes constraints of being compatible with other resources. The Blue Mountain National Forests are currently redoing their land use plans and additional restrictions are likely to be placed on energy and mineral development based on new science and increased public concern for resource protection. Reclamation requirements and the designation of avoidance and exclusion areas in this plan would cumulatively add to present and future restrictions on all these activities. Although fewer areas may be available, new technologies and current emphasis is likely to result in more actual construction and/or development than has occurred in the past. Adjacent private lands are developing energy projects, especially wind development projects and will cumulatively add these types of projects to the planning area. The BLM lands in the basin are likely to see an increase in the amount of development of energy projects due to demand and new technologies. However, the BLM would remain a minor supplier of these resources throughout the basin based on the scattered land pattern and restrictions.

### **Locatable**

Only 6% of the plan area has high potential for locatable minerals. The BLM has subsurface ownership of only 0.15% of the plan area with high potential for locatable minerals. As a result, none of the alternatives would unreasonably restrict the exploration or development of locatable minerals across the plan area.



### **Leasable**

The entire plan area contains over 2.3 million acres of land with high potential for subsurface oil, gas, and geothermal energy. Although BLM owns almost 40% of these lands, the BLM manages only 13% of the surface of these lands and restricts development on only 6 to 7% under all alternatives. As a result, none of the alternatives would unreasonably restrict the exploration or development of leasable minerals and geothermal resources across the plan area.

### **Wind Energy**

Wind energy potential is greatest in the northern portion of the plan area and along the Columbia River. This has also been the focus of recent wind energy development on private land. The BLM has identified multiple utility and transportation corridors that stretch east and west across this northern portion of the plan area to transport electricity across the region.

Almost 372,146 acres of the plan area have at least 'fair' potential for wind energy development. Management responsibility for these areas is as follows: private ownership (75%), USFS (18%), BLM (6%), and Bureau of Indian Affairs (1%). Under all alternatives, approximately 2 to 3% of the BLM's 6% is available for wind energy development. Although the BLM does not account for a major share of the wind energy potential, this allocation, in combination with the identification of areas suitable for major transmission lines, would enable future wind energy development in the plan area.

### **Salable**

Within the plan area, over 3.3 million acres have high potential for salable minerals. The BLM manages approximately 3% of these high potential areas. As a result, none of the alternatives would unreasonably restrict mineral material disposal or related uses in the plan area.

## **Lands and Realty**

Analysis of the environmental consequences of the alternatives on lands considered the following key resources or resource uses: transportation management and agricultural lands.

Indicators used to compare environmental consequences between alternatives include: acres without public access, acres available for disposal under the Federal Land Transaction Facilitation Act of 2000, expected rights-of-way application, lands available for agricultural entry, management flexibility, and acres avoided or excluded for rights-of-way applications.

### **Lands and Realty Indicators**

- **Acres of the National System of Public Lands with legal public access.** As lands are acquired or exchanged, access to public lands may change. As public access increases, conflicts related to trespass across private property may decrease.
- **Acres available for disposal under the Federal Land Transaction Facilitation Act of 2000.** A portion of the revenue from the sale of these lands may be used to purchase land from willing sellers in the plan area that meets the acquisition criteria.
- **Expected rights-of-way applications.** Restrictions on or the enabling of public travel on BLM routes increase or decrease, respectively, the number of applications for rights-of-way required by adjacent landowners.
- **Acres available for agricultural entry.** Prescriptions on the management of agricultural lands alter the number of acres available for agricultural entry.
- **Acres avoided or excluded from rights-of-way applications.** The configuration of lands available, avoided, or excluded from potential rights-of-way projects varies by alternative. As restrictions increase, management flexibility decreases and may shift projects onto neighboring lands or regions.



- **Acres zoned as Z-1.** This designation does not allow for use of such lands to be exchanged for private lands that would be even more highly valued. As a consequence, this classification reduces the flexibility of the BLM in meeting its management objectives.

## Lands and Realty Assumptions

- The classification decisions in the RMP are not implementation level decisions, but depend on site-specific NEPA analysis and attainment of other RMP objectives prior to trade or disposal. As such, effects of land tenure zoning on various resources and resource uses are not analyzed at the plan level. During implementation, special values may be found on lands initially classified for potential disposal (Z-3) or trade (Z-2). Therefore, these lands may never leave public ownership.
- Lands zoned Z-1 will remain under BLM administration.
- Over the last decade, most of the plan area acquisitions and trades have been legislated. For analysis purposes, it is assumed that future acquisitions and trades will match the public sentiment that generated the proposed land acquisition criteria.
- The most common method of accessing public lands requires travel on a public road and then onto public lands on foot, horse, or ground-based vehicle. While access by plane or helicopter may be available to a small portion of those using the plan area, most of the public access is overland travel.
- Private landowners currently using isolated parcels will apply for rights-of-way if the roads on those parcels are closed to public access.

## Analysis of the Effects of the Alternatives on Lands and Realty

The analyses described herein are focused on actions of potential measurable environmental consequence.

The following resource uses under all alternatives would have no difference in effects on Lands and Realty across alternatives: Soils, Air Quality, Vegetation Management, Special Status Plants, Fire and Fuels, Aquatic Resources, Wildlife, Wild Horses, Native American Uses, Paleontological Resources, Livestock Grazing, Recreation Opportunities, and Hazardous Materials Management.

### Lands and Realty Management Effects on Lands and Realty

While the majority of BLM lands in the plan area have legal public access, almost 20% do not. While wording of the alternatives varies slightly, they have similar intents. As a result, the effects on legal public access are likely to be very similar between the alternatives. Most acquisition criteria are represented on Map 16. Within this acquisition zone, several parcels currently lack public access. Acquisition of parcels connected to public lands with access would increase the plan area lands with public access by 7% or more. This, in combination with using right-of-way requests to acquire access to public lands (under the action alternatives), exchanging lands, and other actions, would increase the percentage of public lands with public access by 10% over the life of the plan (Objective LR4).

The lands zoned for potential disposal (Z-3) vary by alternative. As a result, lands available for sale and potential reinvestment in the plan area under legislation similar to FLTFA (here in referred to as FLTFA) vary by alternative. Under Alternative 1, there would be 36,956 acres of lands available for FLTFA. The action alternatives would have 18,429 acres available. Therefore, Alternative 1 is more likely to return profits from FLTFA to the plan area to purchase lands for BLM land management objectives.

Recent and historic requests for major transmission lines have followed existing utility corridors. The scattered BLM/private ownership pattern across the plan area encourages the use of existing corridors and rights-of-way over the massive coordination effort that would be necessary with private landowners to connect through a new route. As a result, maintaining the existing utility corridors under all alternatives is likely to provide the least conflict across the landscape for rights-of-way associated with utility and transportation corridors and is not expected to reduce the ability to sell, exchange, or acquire lands to meet management objectives.



Under Alternative 1, almost 40% of the plan area is closed (including NSO, see Minerals and Energy Section) to new rights-of-way. The action alternatives propose a 10% increase in right-of-way closure. However, effects are expected to be minimal because existing rights-of-way may be maintained under all alternatives (including 32 under Alternative 1, and 37 in the action alternatives). The BLM land ownership patterns include both scattered parcels and large blocks. The need for new rights-of-way is minimal in consolidated tracts of public land, and most scattered parcels are either zoned as Z-3 (disposal) or available for rights-of-way.

### **Transportation Management Effects on Lands and Realty**

Under Alternative 1, approximately 250 routes are landlocked. While they are not closed, few rights-of-way exist for access across these parcels. As a result, very few rights-of-way applications would be anticipated under Alternative 1. Under Alternative 3, effects would be similar to Alternative 1, except that the seasonal restrictions on public use of roads may instigate a few right-of-way applications. Under Alternatives 2, 4, and 5, the interim and final transportation system closes 409 routes. Of those, approximately 10% may require rights-of-way for the routes leading to private land or routes surrounded by private land with no legal public access.

### **Agricultural Land Management Effects on Lands and Realty**

The allocation of uses on agricultural type lands alters the number of leases and agricultural entries under Section 7 of the Taylor Grazing Act of 1934, as amended. Under Alternative 1, approximately 492 acres would be available for agricultural use. Under the action alternatives, up to 400 acres may be authorized for agricultural use. However, the actual agricultural entries are expected to follow market trends and remain low over the life of the plan. Other agreements, leases, or public purposes acts on agricultural lands would be addressed at implementation level planning.

## **Communities and Economies**

### **Introduction**

Analysis of the environmental consequences of the alternatives on the local economy and communities living within the John Day Basin considered the following key resources or resource uses: Vegetation (forest products), Fire and Fuels, Special Designations, Livestock Grazing, Recreation Opportunities (use and permits), Access and Travel Management, Energy and Mineral Resources, Lands and Realty, and Agricultural Land Management. The analysis also assessed relative effects of the alternatives on BLM expenditures and employment, disabled users, environmental justice, payments to counties, amenities, migration, and non-market values.

Indicators used to compare environmental consequences between alternatives include: employment and labor income created/lost from BLM management actions, changes to community well-being, and concerns expressed by the communities living and interested in the John Day Basin.

### **Social and Economic Assumptions**

- The plan area population will continue to increase and age as described in Chapter 3.
- The social groups are defined to facilitate the discussion of social impacts. These discussions simplify what are often quite complex and unique values and attitudes and the groupings presented here are by no means mutually exclusive. For example, many ranchers also participate in recreation activities. It is also worth noting that attitudes, interests, and values often change over time. The social analysis will cover the groups and individuals that are most likely to be affected by this plan.
- Regional economic impacts are estimated based on the assumption of full implementation of each alternative. Actual changes in the economy would depend on individuals taking advantage of the resource-related opportunities supported by each alternative. If market conditions or trends in resource use were not conducive to developing some opportunities, the impact on the economy would be different than estimated herein.



- Resource specialists projected annual resource outputs based on the best available information and professional judgment. The purpose of the economic analysis is to compare the relative impacts of the alternatives and should not be viewed as absolute economic values.
- 99.5 percent of timber harvested within the analysis area is logged by logging contractors, while 0.5 percent is logged by local residents.
- Timber harvested within the analysis area would be distributed among the following sectors: sawmills and planing mills (98 percent) and prefabricated wood buildings (less than 1 percent).
- The ratios of harvest to jobs and income used to assess the impacts of the alternatives are based on statewide ratios developed for Oregon by the University of Montana (Keegan *et al.* 2003).
- Over the long term, timber prices are residual values determined by national and international markets based on what the final product market will pay for timber, rather than supply competition at the local level (Lippke *et al.* 2006, pg iii). In addition the share of timber contributed to total harvest in the area is relatively too small to have price impacts in the short term.
- Projected recreation visits are distributed among different types of visitors based on the results of National Visitor Use Monitoring surveys conducted for the Malheur, Ochoco, and Umatilla National Forests.
- The ratios of recreation visits to jobs and income used to assess the impacts of the alternatives are based on national ratios developed through the Forest Service's National Visitor Use Monitoring program.
- Baseline recreation demand is assumed to increase by 3.5 percent per year.
- AUMs under the Reserve Forage Allotment classification are assumed to be utilized 33 percent of the time as regular AUMs (personal communication with Prineville District Office Range staff).
- Range revenues received by BLM and the value of BLM AUMs to operators were calculated using the conservative AUM price for 2008 of \$1.35 per BLM AUM and \$10 per AUM leased in the competitive market.

## Analysis of the Effects of the Alternatives on Communities and Economies

This section presents an analysis of social and economic impacts for the management alternatives proposed in the John Day Basin PRMP/FEIS. It discusses economic then social effects common to all alternatives, economic and social effects common to the action alternatives, and then economic and social effects of each alternative.

This section will discuss employment, labor income, and effects on sectors in the eight-county area economy that encompasses the John Day Basin. Impacts to tax revenues, environmental justice, and social communities within the basin will also be presented. Finally, forecasts for the area will be discussed in light of the changes predicted over the 10-year period of analysis.

The economic analysis focuses on changes in labor income and employment associated with BLM planning actions and estimated outputs for the alternatives (Table 4-31). The social analysis focuses on changes to social and economic well-being. Higher employment, subject to some qualifications, can be seen as a benefit to the local community. Other benefits are also present, although some are not easily measured or tied to economic activity. An example of where effects are difficult to quantify are equity effects or impacts to social values. Regardless, these benefits are discussed despite our inability to quantify them.

### Economic Effects on Economies

At the John Day Basin planning scale, none of the alternatives would be expected to reduce economic diversity (the number of economic sectors) or increase economic dependency, which occurs when the local economy is dominated by a limited number of industries. While the alternatives have the potential to affect local businesses and individuals, the relative contribution of BLM-related activities to the local economy and the relative differences between the alternatives would not be large enough to have any measurable effect on economic diversity or dependency, though shifts in emphasis could occur. Costs to local governments would also remain unchanged as a result of planning actions (i.e., demand for services and infrastructure would not change as a result of BLM planning actions). The dependency of the local economy on livestock industry, forest products, mining, and recreation activities would not be affected by BLM resource management.



**Table 4-31. Estimated Outputs by Alternative<sup>1</sup>.**

Output	Current <sup>2</sup>	No Action	Alternatives 2-5
Cattle (animal unit months) <sup>3</sup>	16,500	26,312	see Table 4-34
Sheep (animal unit months)	770	836	
Agricultural Lands (acres)	250	400	180
Estimated Forest Product Output (hundred cubic feet) <sup>4</sup>	1,708	6,642	4,820
Bentonite (short tons)	NA <sup>5</sup>	134	134
Construction Sand and Gravel (short tons)	4,660	4,660	4,660
General Recreation (visits) <sup>6</sup>	108,557	131,810	131,810
Fish and Wildlife Recreation (visits)	35,545	43,160	43,160
Crushed Stone (short tons)	1,550	1,550	1,550

<sup>1</sup>All resource outputs, except recreation, are expected to remain constant over the 10-year analysis period. These figures are approximate and intended solely for the purpose of economic and social analysis.

<sup>2</sup>Estimates include actual use levels (average).

<sup>3</sup>Data are based on head months available for activation. The share of actual use from what is available has decreased from 78 percent in 1999 to 48 percent in 2007 (see Table 3-19). 1 head month of cattle and horses = approximately 0.77 AUMs for cattle and horses; 1 head month for sheep and goats = approximately 3.4 AUMs for sheep and goats.

<sup>4</sup>Sawtimber data are based on the Probable Sale Quantity. The current annual average harvest is approximately 26 percent of the current Allowable Sale Quantity.

<sup>5</sup>Bentonite is not currently removed from the plan area.

<sup>6</sup>Recreation visits are expected to increase by 3.5 percent each year.

This is also the case with respect to economic and social well-being, which can be assessed in terms of changes in income, employment and the season of employment, and population.

Estimates of the levels of employment and labor income that would be supported by the alternatives are based on projected resource outputs from BLM management actions (Table 4-32). Estimated average annual employment and labor income are summarized by resource area in Table 4-32 and Table 4-33, respectively. The projected outputs and estimated employment and labor income are discussed by resource in the following sections. Across all BLM resources, impacts from program-related activities under the action alternatives could support higher levels of employment and labor income than currently experienced. Recreation provides the largest program-related contributions to area jobs and labor income under all the alternatives (Tables 4-32 and 4-33). The largest

**Table 4-32. Average Annual Employment<sup>1</sup> by Program by Alternative (Full and Part-time Jobs).**

Resource	Current	Alternative 1 No Action	Alternative 2 Preferred	Alternatives 3-5
Recreation <sup>2</sup>	55	66	66	66
Wildlife and Fish Recreation <sup>2</sup>	19	24	24	24
Forest Products	14	56	40	40
Grazing	6	10	2	See Table 4-35
Minerals	0.3	0.3	0.3	0.3
Payments to Counties	0.4	0.8	0.4	0.5
Total BLM management	95	157	133	135
Percent change from current		64%	40%	42%

<sup>1</sup>Average annual values are based on projected impacts over the 10-year analysis period. Source: Potential employment and labor income impacts are based on the estimated resource outputs summarized by alternative in Table 2-23. Potential impacts were estimated using the IMPLAN model and FEAST.

<sup>2</sup>As discussed in Chapter 3, these recreation estimates do not include visits from local use since their expenditures do not represent new money into the economy.



**Table 4-33. Average Annual Labor Income by Program by Alternative (thousands of dollars).**

Resource	Current	Alternative 1 No Action	Alternative 2 Preferred	Alternatives 3-5
Recreation	\$1,372.82	\$1,666.88	\$1,666.88	\$1,666.88
Wildlife and Fish Recreation	\$486.90	\$591.20	\$591.20	\$591.20
Forest Products	\$432.60	\$1,682.32	\$1,220.88	\$1,220.88
Grazing	\$103.22	\$162.87	\$32.54	See Table 4-36
Minerals	\$13.52	\$15.98	\$15.98	\$15.98
Payments to Counties	\$12.16	\$28.02	\$12.96	\$15.97
Total BLM management	\$2,421.21	\$4,147.28	\$3,540.44	\$3,578.97
Percent change from current		71%	46%	48%

employment and labor income effects would occur in the accommodations and food services, agriculture, and retail trade industry sectors (IMPLAN 2006). Impacts associated with forest products and grazing are speculative considering differences in actual and authorized use levels. The PSQ estimates under the action alternatives would accommodate levels of forest product contributions seen in the past. However, utilization of the grazing matrix (Alternatives 3, 4, and 5) and Lease Relinquishment Decision Tree (Alternative 2) could decrease levels of authorized AUMs through voluntary relinquishment.

While BLM-related jobs and labor income impacts would likely continue to be less than one percent of totals within planning area counties, employment and labor income could be more important for smaller communities within planning area counties. Under all the alternatives, the largest employment and labor income effects would occur in the accommodations and food services, agriculture, and retail trade industry sectors (IMPLAN 2006).

## **Recreation Use and Recreation Permits Effects on Economies**

### ***Effects Common to All Alternatives***

While providing recreation opportunities to local residents is an important contribution, the recreation expenditures of locals do not represent new money introduced into the economy. If BLM-related opportunities were not present, residents would likely participate in other locally based activities and their money would still be spent in the local economy. After separating the contributions made from local residents, recreation contributes the most employment and labor income to the area economy of all resource programs under all alternatives (Tables 4-32 and 4-33).

The role of recreation in the local economy would continue as OHV use, non-motorized use, boating and other forms of recreation continue to increase. Travel to the basin from throughout the state to enjoy these opportunities is not an unreasonable assumption. Population projections for counties in and around the plan area suggest an annual average increase of 3.5 percent is reasonable and conservative (State of Oregon DAS 2007).

An annual average of approximately 132,000 general recreation visits and 43,000 fish and wildlife-related recreation visits are projected under all the alternatives (Table 4-31). This increase over the current level of visitation would be due to the baseline increase in recreation visits (3.5 percent per year) that is projected under all of the alternatives. It is assumed that revenues received by BLM from campground and commercial recreation fees would increase at a similar rate and would average about \$16,000 annually.

While there are no differences anticipated as a result of the alternatives, recreation actions would sustain use levels important to the area economy and well-being. Under all alternatives, area recreation on BLM-administered lands would sustain approximately 66 jobs and \$1.7 million in labor income annually in the eight-county planning area from non-local contributions (Tables 4-32 and 4-33) (IMPLAN 2006). While this does not consider economic contributions made from local recreationists, the economic impacts from the recreation program are estimated to be the largest among programs managed within the John Day Basin.



Jobs and income associated with recreation management should not overshadow the economic value of experience by recreation users within the basin. Boating use in the lower river basin could change as management actions associated with existing management are implemented. For example, BLM management of the recently designated Spring Basin Wilderness could increase boating use along the John Day. Additionally, if Congress designates the North Fork John Day as a Wild and Scenic River, increased use may result. Conservative benefit estimates for river use in Oregon and California (Douglas *et al.* 1998) value a per-person per-day river trip at \$34.67 in 2006 dollars. Given river visitation numbers for 2006 (boater visits from Prineville District office staff), the value of float boating, canoeing, and rafting totaled \$669,200. This number would at least be maintained with recreation management proposed in the alternatives, and could increase with increased use levels. Similar estimates for OHV and other motorized or non-motorized recreation are not available given the lack of data regarding visitor use levels for these activities.

### **Effects of Alternative 1**

It is estimated that recreation, including fish and wildlife-related recreation activities, currently accounts for approximately 57 percent of all the jobs and 54 percent of labor income that could be supported by Prineville District Office activities (Table 4-32 and Table 4-33). Motorized access and motorized recreation opportunities would not change from the current condition.

### **Effects Common to All Action Alternatives**

Outfitters and guides would have more opportunity under the action alternatives than currently since BLM would issue new upland-based special recreation permits as deemed appropriate by this RMP.

## **Forest Products Effects on Economies**

### **Effects Common to All Alternatives**

The No Action and action alternatives would continue to supply wood product materials as shown in the estimated forest products output estimates in Table 4-31. Under the No Action Alternative, the current Allowable Sale Quantity (ASQ) would potentially be available, while under the action alternatives the Probable Sale Quantity (PSQ) would potentially be available. To the extent practical, the proposed resource management plan would allow for the entry of new business that might offer value added products (such as log homes or furniture) or biomass energy. These nontraditional materials have sometimes been considered low value forest materials; however, industries could develop in the region that would utilize these products more efficiently.

While harvests under the No Action Alternative and action alternatives would not have a large effect (considering the total amount of material available from all ownerships in the area (Figure 3-34), they are still important. Considering decreases in federal harvests throughout the region (Figure 3-34), the BLM has recently provided a greater share of forest products than it has in the previous 40 years. Despite relative decreases in actual levels of harvest from BLM lands, the BLM may provide an increasing share of the total harvest if the PSQ estimates are harvested.

The vegetative treatments proposed under all alternatives would tend to reduce the occurrence and intensity of wildfire events. These treatments are expected to reduce the severe levels of tree mortality and site damage experienced during large scale, stand-replacement events; they would also reduce the amount of salvage volume available from such events in the future. The treatments, which intend to reduce the severity of wildfire events, would also supply future forest products, thereby helping to sustain economic conditions.

The existing management and proposed alternatives would sustain current local government revenues from forest product sales within the area, as 4 percent of non-stewardship timber receipts are paid to the counties where they are generated. If PSQ estimates were achieved (beyond the 26 percent of existing ASQ harvested), revenues received by counties would increase.

### **Effects of Alternative 1**

Alternative 1 would allow an average annual harvest of approximately 6,642 hundred cubic feet (CCF) of forest products (Table 4-31). The majority of this estimate (6,638 CCF) is based on the sawtimber ASQ and reflects the annual volume that would be available rather than actual harvest projections. Annual average harvest is approximately 26 percent of the current ASQ. The remainder of the harvest estimate consists of fuelwood and post



and poles (4 CCF). If harvests were to occur at ASQ levels, approximately 56 jobs and \$1.7 million in labor income (Table 4-32 and Table 4-33) would be supported within the local or regional economy. In addition to direct job and income impacts in the forest products industry, these estimates include impacts to industries that provide factors of production to the forest products industry, and other industries impacted by wage-related spending.

Alternative 1 would maintain current levels of BLM forest product offerings and current levels of associated employment and labor income (21 jobs and \$465,000 in labor income). If ASQ estimates were achieved, employment and labor income could increase to levels noted above, and economic well-being would potentially improve.

### **Effects Common to All Action Alternatives**

The action alternatives would provide for an average annual harvest of approximately 4,820 CCF of forest products (Table 4-31). The majority of this estimate (4,817 CCF) is based on the sawtimber PSQ and reflects the annual volume that would be available, rather than actual harvest projections, if the Prineville Office committed to treating 1,000 acres per year by commercial and pre-commercial thinning. The remainder of the harvest estimate would consist of fuelwood and post and poles (3.21 CCF). This harvest, if it were to occur, would support approximately 40 jobs and \$1.2 million in labor income (Table 4-32 and Table 4-33). The action alternatives offer less forest products and thus have smaller consequent impacts than the No Action Alternative. However, it must be noted that only 26 percent of ASQ has been harvested historically. The action alternatives could thus maintain or increase the jobs and labor income supported through forest product management since potential CCF under the offered PSQ is greater than recent harvests from BLM.

## **Livestock Grazing and Ranching Effects on Economies**

### **Effects Common to All Alternatives**

The relatively low level of economic dependency on BLM forage would continue under all the alternatives. The BLM's permitted use levels would provide a maximum of approximately 6.5 percent and a minimum of 1.2 percent of total forage needed to feed livestock in Gillam, Grant, and Wheeler counties in 2007. Jobs and labor income associated with grazing would continue to account for less than one percent of area totals (in both the smaller Gilliam, Grant, and Wheeler area and the larger eight-county areas). However, these jobs and the forage provided by BLM could be more important for smaller communities within planning area counties.

Although overall economic dependency would remain low, it is reasonable to assume that BLM forage would continue to provide a low cost and important complement to some livestock producers' grazing, forage, and hay production. While the value to area operators is not evident in the projected job and employment impacts, they should be considered. The value to these operators from BLM grazing can be estimated as the difference between the competitive market price of an AUM and the BLM lease fee. This value is experienced above the price ranchers pay for AUM leases and can be considered a benefit. The benefit to operators from BLM grazing varies amongst the alternatives, however would not fall below \$48,500.

### **Effects of Alternative 1**

Alternative 1 could authorize average annual grazing of approximately 26,312 cattle AUMs and 836 sheep AUMs (Table 4-34) and support as much as 10 jobs and \$162,870 in labor income (Table 4-32 and Table 4-33). Annual revenues received by the BLM from grazing leases would amount to approximately \$36,600.

**Table 4-34. Current Use and Permitted Animal Unit Months per Alternative.**

Resource	Current	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Cattle	16,493	26,312	4,742	10,618	10,047	10,472
Sheep (Horn Butte)	770	836	836	836	836	836



The benefit of BLM AUMs to operators associated with 27,148 BLM AUMs would continue to be approximately \$234,800. So while estimated impacts are relatively small in comparison to area employment and labor income, the value of BLM AUMs to area ranchers would be maintained.

### **Effects Common to All Action Alternatives**

A determination of changes to livestock grazing provided by BLM is speculative given high degrees of variation that could result with implementing the grazing matrix under Alternatives 1, 3, 4, and 5 and implementing the Lease Relinquishment Decision Tree under Alternative 2 (see Livestock Grazing, Chapter 2 for a description of the Grazing Matrix and the Lease Relinquishment Decision Tree). Under all alternatives, the authorized level of use would decrease; however, the AUM estimates assume voluntary relinquishment of 100 percent of the applicable grazing leases.

As stated above, this decrease is speculative since it depends on voluntary relinquishment of permits. The economic contribution from BLM would decrease; however, changes in equity from this decrease cannot be inferred. Since ranchers act in their own best interests and seek to improve their well-being, voluntary relinquishment would at least maintain or improve their well-being.

Given the possibility of voluntary relinquishment of permits with use of the grazing matrix and Lease Relinquishment Decision Tree, average annual employment and labor income supported by all grazing alternatives could drop slightly (Tables 4-35 and 4-36).

Under the action alternatives, with the possibility of full relinquishment of grazing leases, payments to counties would correspondingly decrease to levels below those currently experienced. Regardless, these payments would provide for a small amount of area employment and income.

The benefit of BLM AUMs to area ranchers could potentially decrease from Alternative 1 to the action alternatives with full relinquishment of permits. It must be noted however that efficiency gains and economic well-being could remain the same or increase as conflicts are resolved with implementation of the grazing matrix and voluntary relinquishment of grazing leases under the Lease Relinquishment Decision Tree (Tables 2-19 and 2-20). These actions may enhance non-market values, offsetting losses in the benefit of BLM AUMs to area ranchers. For example, in-stream flow and water quality could increase existence values as populations of Mid-Columbia river steelhead improve.

### **Effects of Alternative 2**

A determination of changes to livestock grazing provided by BLM is speculative given high degrees of variation that could result with implementation of the Lease Relinquishment Decision Tree (see Livestock Grazing section of Chapter 2 for a description of the Lease Relinquishment Decision Tree).

**Table 4-35. Average Annual Employment Associated with Grazing by Alternative (Full and Part-time Jobs).**

Resource	Current	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Grazing	6	10	2	4	4	4
Payments to Counties	0.3	0.4	0.1	0.2	0.2	0.2

**Table 4-36. Average Annual Labor Income Associated with Grazing by Alternative (Thousands of 2008 Dollars).**

Resource	Current	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Grazing	\$103.22	\$162.87	\$32.54	\$68.05	\$64.60	\$67.16
Payments to Counties	\$8.87	\$13.95	\$2.87	\$5.88	\$5.59	\$5.81



Alternative 2 could authorize approximately 4,792 cattle AUMs and 836 sheep AUMs (Table 4-34), which could support two jobs and approximately \$32,540 in labor income (Table 4-35 and Table 4-36). These job and employment impacts would represent a decrease compared to the current contribution from grazing; however, this AUM estimate assumes 100 percent of applicable grazing leases are relinquished. Regardless, the BLM grazing-related jobs would continue to remain a relatively small portion of overall employment and labor income for the area.

Annual revenue received by BLM from grazing under Alternative 2 would be approximately \$7,530. The benefit of BLM AUMs to area ranchers would be approximately \$48,250 with full voluntary relinquishment of permits. So, while estimated employment and income impacts are small, the value of these AUMs to local ranchers is important. The AUM benefit would be less than Alternative 1; however, economic well-being could remain the same or increase as conflicts are resolved with voluntary relinquishment of grazing leases. Non-market values may be enhanced with the Lease Relinquishment Decision Tree since campsites and Mid-Columbia steelhead and Washington ground squirrel habitat would be considered during reauthorization of relinquished permits. For example, in-stream flow and water quality could increase existence values as populations of Mid-Columbia river steelhead improve. The resulting increases in non-market values could offset losses in the benefit of BLM AUMs to area ranchers.

### ***Effects Common to Alternatives 3, 4, and 5***

Alternatives 3, 4, and 5 could authorize a maximum AUM contribution higher than Alternative 2 (Table 4-34) and could support slightly greater amounts of area employment and labor income. However, BLM grazing-related contributions would continue to remain a relatively small portion of overall employment and labor income for the area; about 4 jobs and \$64,600 to \$68,000 in labor income would be supported annually (Table 4-35 and Table 4-36). The range of annual revenue received by BLM from grazing and the benefit of AUMs to area ranchers (\$14,700 to \$15,400 and \$64,100 to \$99,000, respectively) would also be higher than Alternative 2.

## **Mineral Resources Effects on Economies**

### ***Effects Common to all Alternatives***

Salable minerals, such as sand and gravel, would continue to be provided by the BLM in the plan area. While bentonite is not currently mined, proposals have been submitted and commercial activities are likely to occur in the future. While these mining activities are not a direct result of new planning actions in this resource management plan, management under this RMP would allow and determine the nature of these activities. Less than one job and \$18,800 in labor income would be supported by this mineral activity (Tables 4-32 and 4-33). Since the sand and gravel operations utilized by the county and state governments operate under free use permits, no revenues are received by the BLM and consequently no payments to counties are made. However, the counties receive value from this mineral material and a portion of employment income is provided to communities (Table 4-32 and Table 4-33). Similarly, the bentonite mine would operate according to the 1872 Mining Law, under which claims pay no lease fees; however, they would pay federal taxes on revenues received.

While a small amount of gold is removed from recreational mining activity, other locatable and leasable minerals are not removed from BLM lands in the planning area. Under all the alternatives, all public lands would be open to recreational mineral collection unless there are prior rights in an area, such as mining claims.

## **Payments to Counties Effects on Economies**

### ***Effects of Alternative 1***

All of the AUMs leased by the BLM within the John Day Basin are section 15 permits, from which 50 percent of revenues are distributed to the state and then local counties. Estimated grazing revenue distributions to local counties would be about \$18,000. County payments from forest products sales under this alternative would total \$18,495. Average annual employment associated with these payments to counties would support close to 1 job and \$28,020 in labor income. These estimated payments depend upon actual use levels being equal to ASQ and AUMs authorized. If actual harvests and AUMs utilized follow existing trends, the impacts to employment and labor income would be less than predicted here. On an average annual basis, payments to counties from forest product receipts and grazing leases currently support less than 0.5 job and \$12,160 in labor income (Tables 4-32 and 4-33). Average annual contributions to counties under this alternative would likely remain close to current levels.



## **Effects of Alternative 2**

Annual payments to counties from grazing leases would be about \$3,800. Associated employment would remain at less than 1 job and labor income impacts would amount to \$2,870 (Tables 4-35 and 4-36). Payments to counties from forest products could total \$13,260 with associated impacts of less than one job and \$10,090 in labor income (Tables 4-32 and 4-33). Payments to counties from both range and forest product revenue distributions would remain similar to the No Action Alternative; however, with full relinquishment of grazing leases, the distributions could decrease from current levels.

## **Effects of Alternatives 3, 4, and 5**

Annual payments to counties from grazing leases would be similar for Alternatives 3, 4, and 5, ranging from \$7,730 to \$7,340. Associated employment and labor income impacts from these payments would be similar as well (Tables 4-35 and 4-36). Combined with payments to counties from forest product harvests, the employment and labor income impacts would be slightly more than Alternative 2 (Tables 4-32 and 4-33).

## **BLM Expenditures and Employment Effects on Economies**

### **Effects Common to All Alternatives**

The levels of expenditures and employment at the Prineville BLM Office and within the John Day Basin are not expected to vary by alternative. While this is not a planning level decision, it is an important contribution to the local area economy and well-being. The BLM's expenditures and employment in the basin are expected to follow recent trends as outlined in Chapter 3 (Table 3-17) and may slightly decrease (personal communication with Prineville District Office Budget staff). Because expenditures from BLM actions that occur solely within the basin could not be separated from the overall Prineville District Office expenditures, they were not included in the impact analysis.

## **Land Tenure Effects on Economies**

### **Effects of Alternative 2**

This RMP revision proposes increasing the number of acres zoned Z-3 (available for disposal) from 40,444 to 68,192 acres. While zoning this land as Z-3 makes disposal possible, it is far from guaranteed. Further NEPA processes not covered under this plan would evaluate the availability of this land for disposal if proposed. If this land is disposed, it would no longer count towards the entitlement acreage used in PILT calculations which would decrease the contribution from BLM land in the area. However, if BLM land is disposed, it would be subject to property taxes whereas before disposal it was not. Payments under PILT are designed to help offset losses in property taxes due to the nontaxable status of Federal lands within state or county boundaries. Therefore, in theory, county property taxes should increase and offset losses from the qualifying entitlement acreage for PILT.

If BLM land ownership does shift, approximately 18,000 acres of this Z-3 land are most likely to be disposed. These lands qualify under the Federal Land Transaction Facilitation Act as lands that BLM can sell and use the money to buy more land on the district. This would comprise approximately 4 percent of 2007 BLM entitlement acreage in the eight-county study area. Any one county could lose these lands and the associated payments while the other counties would theoretically then see increases in payments with gains in entitlement acreage. Impacts associated with these payments to any 1 county would be less than 1 job and \$4,700 in labor income. Despite these possible changes, total PILT payments from the federal government to the eight counties within the study area would likely continue to remain around recent levels.

## **Fire and Fuels Effects on Economies**

### **Effects Common to All Alternatives**

Projected fuel treatment costs vary from approximately \$437,000 to approximately \$635,000 annually under all alternatives. Potential wildland fire-related costs (such as property loss, lost revenues, and suppression costs) cannot be projected. It is commonly accepted that fire suppression costs and risk to life and property should be less when wildland fires occur where hazardous fuels have been treated compared to areas where fuels have not been treated. For example, fires generally burn hotter, flame length is higher, and fires in tree canopies are more likely in non-treated areas.



It is anticipated that fuels treatments on public lands within the plan area would contribute to fuels conditions that would have less resistance to wildland fire control. This would tend to reduce the threat to life and property. It is not, however, possible to project the level of non-prescribed wildland fire that would occur under any of the alternatives. Based on the level of hazardous fuels treatments under the proposed alternatives, one might conclude that fire suppression costs would be greater than in the past since fewer acres would be treated than currently (see Table 4-31). However, the use of appropriate response (including fire to achieve resource objectives) on approximately 1,500 acres would essentially act as treatment in areas already prone to fire, further reducing future wildland fire-related costs.

## **Renewable Energy Effects on Communities and Economies**

### ***Effects Common to All Alternatives***

While all land in the plan area without surface occupancy restrictions would potentially be available for wind energy development (given further site-specific review), not all land can be considered suitable for development. Developable land for wind energy depends on the wind resource and transmission line availability and capacity. Decisions to invest in wind energy are also dependent on the cost of alternative sources of energy, as well as the regulatory environment and other costs to society. Natural gas, oil and coal prices therefore also determine the level of wind energy investment. The commercial viability of wind power also depends on the pricing regime for power producers. All of these components are difficult to predict and make speculation on possible development impractical.

However, some speculation can be made based on professional judgment. Within approximately 20 miles of the Mid Columbia River Corridor, private land available for wind energy development is saturated with wind turbines. Within this corridor, development interest may exist on BLM lands. Further south, specific areas with high wind potential may be of interest (personal communication with Paul Woodin). The BLM-administered lands with high wind potential may not be plentiful in the plan area and would thus limit development. Additional costs associated with development on public land (i.e., site-specific planning) may inhibit development as well. However, given further saturation of available private land and/or changes in energy markets and technology, development on BLM-administered lands in the plan area may become more likely.

## **Role of Amenities, Migration, and Non-market Values on Economies**

### ***Effects Common to All Action Alternatives***

The economic analysis assesses the economic effects of the direct use of resources in terms of jobs and income. This type of analysis does not include other types of economic value often referred to as non-market values. Non-market values are held by visitors, area residents, and others outside the basin and are an important part of their well-being. They include natural amenities, quality of life factors, recreational opportunities, ecosystem services, and non-use values such as existence, option, and bequest values.

Non-market values associated with recreation opportunities are addressed along with economic effects from recreation when data is available. Other non-market values are difficult to quantify or insufficient data exists to assess the effects of management actions. However, the fact that no monetary value is assigned to these values does not lessen their importance in the decision-making process.

Regardless, we can make some helpful inferences. While there is a general consensus that non-use values exist, the methodologies for measuring these values are controversial and difficult to apply. Wilderness has been the subject of numerous non-use studies, usually conducted for specific natural areas; however, no attempt has been made to directly elicit potential non-use values associated with the alternatives under this RMP. None of the alternatives propose new wilderness, but the action alternatives would establish areas to be managed for wilderness characteristics; propose several new ACECs; and recommend segments of the North Fork John Day River for congressional designation to the National Wild and Scenic River System). A total of at least 19,442 acres under Alternatives 2, 3, and 5, and 35,457 acres under Alternative 4, are proposed to be managed by the BLM for protection of wilderness characteristics; there would also be 68,404 acres of ACEC/RNAs that would be proposed. Under the No Action Alternative, management for wilderness character is limited to previously identified Wilderness Study Areas. The proposed action would also increase the amount of ACECs by more than ten times what is currently designated. These designations would further maintain and perhaps enhance non-market values associated with natural amenities protected on these lands.



In addition to ACECs, lands to be managed for wilderness characteristics and recommended as Wild and Scenic Rivers may attract new residents to the area, which would then contribute to area economic activity. Natural amenities and quality of life have been increasingly recognized as important factors in the economic prospects of many rural communities in the West (Rudzitis and Johnson 2000). In addition, non-labor income is tied to natural amenities as discussed in Chapter 3. Rural county population change, the development of rural recreation, and retirement-destination areas are all related to natural amenities (McGranahan 1999). Thus, the established ACECs and land to be managed for wilderness characteristics may similarly contribute to the area's economic well-being.

### **Effects of Alternative 3**

As discussed above under Effects Common to Action Alternatives, more land would be managed for wilderness characteristics, more acres as ACECs, and more miles of the North Fork John Day would be recommended for designation as WSR under the action alternatives than Alternative 1. Alternative 3 recommends the same number of miles be designated WSR, except under either a Scenic or Recreation classification, depending on segment. This alternative would ensure protection of non-market values and natural amenities valued by current and new residents to the area to almost the same degree as Alternative 2.

### **Effects of Alternative 4**

Under Alternative 4, no miles of the North Fork John Day River would be recommended as suitable for designation as a Wild and Scenic River. This alternative would have the least protection of WSR-related non-market values and natural amenities that are valued by current and new residents to the area. However, under this alternative, all areas found to have Wilderness Characteristics would be afforded the full range of protections identified for wilderness character values; thus, this alternative would have the most acres designated to maintain wilderness characteristic related non-market and natural amenity values.

## **Social Effects**

The following social analysis assesses the potential effects of management actions common to all the alternatives on identified social groups. These groups were identified based on past studies in and around the plan area, public scoping, and public meetings conducted for the John Day Basin RMP. The analysis addresses the potential impacts of the alternatives based on the issues and concerns raised by these groups during the public involvement effort.

### **Recreation Effects on Social Groups**

#### **Effects Common to All Action Alternatives**

Limiting Class I, II, and III OHV use to designated roads and trails, except within the designated Open areas, would be less favored by individuals and groups interested in OHV use, hunting, and access. However, these changes could be favored by those interested in resource protection and non-motorized uses. General areas subject to these changes include the Bridge Creek SRMA, Lower John Day SRMA, and the ERMA.

Despite these new area designations, some areas (such as the JV Ranch) that have been historically closed would be designated as Limited to designated trails. This change could be preferred by OHV users, hunters, and those interested in access. Technical Class II, Class III, and mountain bike opportunities would be provided under the action alternatives. Horseback riding, camping, boating, wildlife viewing, hunting, recreational mining, rock hounding, antler collecting, and scenic driving opportunities would continue to be provided by the action alternatives.

Outfitters and guides would have more opportunity under all alternatives than they currently do since BLM would issue new upland-based special recreation permits as appropriate. Opportunities along the river could be enhanced given the moratorium on new permits and transfers would be discontinued. Individuals and groups interested in niche market opportunities would likely prefer this over the No Action Alternative. Employment for locals was an interest often expressed during the public involvement process. These new permits were often cited as a means to capture more jobs locally, which could occur under the action alternatives.

Limits to access by hunters, outfitters, and guides might occur with restrictions on cross-country OHV travel and game retrieval. However, game retrieval by other methods such as horseback may become more common with restrictions on OHV use.



This social discussion examines effects to adjacent residents in the Little Canyon Mountain area; effects to general users are discussed in greater detail in the recreation section of this chapter. Under all the action alternatives, except Alternative 5, the effects to residents from OHV sound would occur to some degree as shown in Tables 4-23a, 4-23b, and 4-24. Area residents hold different perceptions of this use and its consequent noise impacts; some residents find the use and noise acceptable if managed properly at acceptable levels while others find any use or noise impact unacceptable.

The recreation section of this chapter discusses factors that affect how sound propagates away from its source and the role that distance plays as a buffer from these sources. Using this information and data on the number of residences that fall within different distances from the North and South Pit Areas of Little Canyon Mountain (Table 4-23b), the BLM expects that OHV sound levels under the action alternatives are unlikely to exceed standards for daytime noise levels at any residence currently adjacent to the North and South Pit Areas of Little Canyon Mountain. In addition, the action alternatives would reduce OHV sound relative to the No Action Alternative. While some degree of OHV-sound impacts would remain under all the action alternatives, these alternatives are expected to reduce conflict between OHV users and adjacent landowners. For example, limiting OHV use to designated routes under all the action alternatives would decrease the amount of area affected by sounds from OHV use. Effects specific to the North and South Pit Areas are discussed below.

### ***Effects of Alternative 1***

Under Alternative 1, existing motorized and non-motorized recreation and access opportunities would continue; thus, the season closure and route designation occurring under the other alternatives would not occur. For example, the seasonal closure in the Lower John Day SRMA would not be imposed and consequently preferred by those interested in hunting, access, and OHV use in that area. The recreation section of this chapter discusses other specific effects of this alternative on recreation users; however, the effects from OHV noise to adjacent landowners of LCM are of particular concern. Since motorized recreation opportunities would be the same as exist currently, impacts from OHV noise to adjacent landowners would remain the same. With no active control of OHV use adjacent to residences, noise from OHVs could possibly exceed the State of Oregon standard of 60 decibels.

### ***Effects of Alternative 2***

Alternative 2 emphasizes a balance of motorized and non-motorized recreation and access opportunities compared to the other action alternatives. Seasonal closure in the Lower John Day SRMA would be preferred less by those interested in OHV, hunting, and access to BLM; however, the 3,971-acre Rudio Mountain OHV area under this alternative and Alternative 3 would be preferred by these individuals and groups. In addition, this alternative would not allow shooting in the Little Canyon Mountain area which would be preferred by area residents. While some individuals accustomed to this unregulated use would not favor this aspect of Alternative 2, they are likely to find other substitute areas for target practice. The recreation section of this chapter discusses other specific effects to recreation users of this alternative; however, the effects from OHV noise to adjacent landowners of Little Canyon Mountain area are of particular concern. Under this alternative, restrictions on allowable decibel levels in the South Pit area and closure of all OHV use in the North Pit area would reduce noise impacts to adjacent residents relative to Alternatives 1 and 3. In addition, the South Pit area would be open to cross-country travel by Class II vehicles only, which typically emit lower frequency sound and may be perceived as less annoying than higher frequency sounds. As described in the recreation section, the closest residence is 937 feet. Table 4-23a indicates the expected noise level at the closest residence to be less than 49 decibels. Since noise levels would not exceed the commonly accepted limit of 55 decibels at adjacent residences, existing conflict would be assuaged with decreased potential for noise impacts relative to the current situation. Regardless, noise effects to adjacent residents would remain greater than Alternatives 4 and 5.

### ***Effects of Alternative 3***

Alternative 3 emphasizes mixed recreation use with a slight emphasis towards motorized uses. Off-highway vehicle users would also likely prefer the 598-acre Golden Triangle OHV Open area in addition to the Rudio Mountain Open area under this alternative compared to the Limited designation under Alternatives 4 and 5. Individuals and groups interested in resource protection and non-motorized use would thus prefer the other action alternatives over Alternative 3. The recreation section of this chapter discusses other specific effects to recreation users of this alternative; however, the effects from OHV noise to adjacent landowners of Little Canyon Mountain area are of particular concern. As described in the recreation section, the closest residence is 937 feet. Table 4-23a indicates the expected noise level at the closest residence to be less than 49 decibels. Since noise levels



would not exceed the commonly accepted limit of 55 decibels at adjacent residences, existing conflict would be assuaged with decreased potential for noise impacts relative to the current situation. Alternative 3 would result in more OHV activity in the North Pit area, which is the closest to the residences. While noise from OHV activity would be within State law at the closest residence, the increased activity relative to Alternatives 2, 4, and 5 would result in noise-related annoyance to residence that oppose OHV noise in this area.

### **Effects of Alternative 4**

Alternative 4 emphasizes mixed recreation use with a slight emphasis towards non-motorized uses. This alternative would likely be favored by non-motorized users and those interested in resource protection based on seasonal closures and Limited area designations. Off-highway vehicle users would prefer Alternatives 2 and 3 under which open cross-country motorized use on the Rudio Mountain plateau would be allowed. The recreation section of this chapter discusses other specific effects to recreation users of this alternative; however, the effects from OHV noise to adjacent landowners of the Little Canyon Mountain area are of particular concern. The noise effects on these residents under this alternative would be less than Alternatives 1, 2, and 3 but more than Alternative 5 as a result of OHV closure in the North Pit area and a reduction in the season of use in the central portion of the Little Canyon Mountain area. As described in the recreation section, the closest residence to the South Pit area is 1,839 feet. Table 4-23a indicates the expected noise level at the closest residence to be less than 43 decibels. Since noise levels would not exceed the commonly accepted limit of 55 decibels at adjacent residences, existing conflict would be assuaged with decreased potential for noise impacts relative to the current situation. Regardless, noise effects to adjacent residents would remain greater than Alternative 5.

### **Effects of Alternative 5**

Alternative 5 would likely be the most favored by non-motorized users and those interested in resource protection. These groups would prefer Alternatives 2 and 3 under which the Rudio Mountain plateau would be open for cross-country motorized use. Management in the Little Canyon Mountain area would be least preferred by OHV users; however, non-motorized users and area residents would likely prefer this alternative over the other alternatives. The recreation section of this chapter discusses other specific effects to recreation users of this alternative; however, the effects from OHV noise to adjacent landowners of the Little Canyon Mountain area are of particular concern. The maximum decibel levels depicted in Table 4-23a would not occur with OHV closure in the North Pit, South Pit, and the central portion of Little Canyon Mountain areas. Since OHV noise levels would not occur nor exceed the commonly accepted limit of 55 decibels at adjacent residences, existing conflict related to OHV noise would be resolved.

## **Forest Products Effects on Social Groups**

### **Effects Common to all Alternatives**

Forest product-related issues raised during public involvement included concerns regarding fuel hazard reduction, impacts to scenery and other resources, dead tree salvage, and area jobs. As noted above, the current annual average harvest is approximately 26 percent of the current ASQ. Thus harvest levels under all alternatives may be infeasible given historic differences in ASQ and actual sales. Some individuals and groups interested in resource protection would be less likely to prefer the current situation as it pertains to hazardous fuel reduction, but prefer the resource protection they associate with less harvest. Individuals and groups interested in resource use would find the continued depressed harvests less favorable since fewer jobs are created. However, some might prefer the fact that more salvage opportunities may be created as fuels continue to go untreated. The potential for unharvested salvage that might also occur under this scenario would further exacerbate the frustration of others interested in resource use.

### **Effects of Alternative 1**

Harvests from BLM lands account for a very small portion of total harvest in the study area (see Forest Products section in Chapter 3). Available forest products under Alternative 1 support what is currently provided, so current contributions would likely remain unchanged. Public access and the availability of firewood and other forest resources would also remain unchanged. As a result, this alternative would be unlikely to affect current social conditions with respect to forest products.

The action alternatives would provide fewer estimated AUMs of grazing and fewer CCFs of timber harvest, relative to Alternative 1. Individuals interested in resource protection would prefer the No Action Alternative as



it relates to fuel hazard reduction, but would find associated impacts to scenery and other resources disagreeable. Individuals and groups interested in resource use would find the higher levels of jobs and labor income associated with this alternative more favorable than the other alternatives, if the harvest estimates under ASQ were achieved. However, harvest levels under Alternative 2 may be more probable given changes in vegetation management outlined in Chapter 2.

One measure of social well-being often considered is change to the season of employment common in the area. The BLM-related activities in the basin include logging and recreation, which are typically characterized by seasonal employment, but none of the alternatives would be expected to affect existing trends in the season that employment occurs.

### ***Effects Common to All Action Alternatives***

Continued access to forest products was a concern stated during public involvement by individuals and groups interested in resource use and niche market opportunities. During formation of the plan, areas surrounding all communities, regardless of size, were considered for special forest product uses; areas within 25 miles of communities greater than 100 in population were considered for these uses, which amounted to the entire plan area.

## **Ranching Effects on Social Groups**

### ***Effects of Alternative 1***

Under this alternative, the authorized level of AUMs would continue to provide approximately 1 percent of the total forage needed to feed the livestock within the plan area. While this may seem like an insignificant number, these lands are important to operators because of their relatively low grazing fees, which provide an important complement to other factors of production for area ranchers (see estimate above of the benefit to area ranchers from BLM AUMs). Issues raised by individuals and groups interested in ranching included fire suppression, access and OHV use. Issues related to fire suppression would in large part remain unaddressed under the No Action Alternative. Current levels of access and OHV use would continue under this alternative, enabling ranchers to maintain their operations as currently managed. Conflicts associated with recreation use, such as vandalism and trash dumping, would likely continue under this alternative.

### ***Effects Common to All Action Alternatives***

Issues brought up during the public involvement process concerning ranching included access and OHV use. Many of these issues and others more specific to certain allotments have the potential to be addressed with implementation of the grazing matrix and voluntary relinquishment of grazing leases under the Lease Relinquishment Decision Tree. Under Alternatives 3, 4, and 5, the matrix modifies livestock grazing to reduce conflicts between grazing and other uses (Tables 2-19 and 2-20). Human uses, ecological conflict, and AUM demand would be considered in this decision. Thus concerns with access and OHV use could be addressed with the matrix. Under Alternative 2, conflicts with recreation and habitat are reduced with consideration of campsites, Mid-Columbia River steelhead habitat, and Washington ground squirrel habitat. Implementation of these actions would be preferred by those interested in resource protection and recreation. Thus, these individuals and groups would likely prefer solutions presented with the matrix and the Lease Relinquishment Decision Tree rather than the No Action Alternative. In addition, reserve forage allotments would be available, which would often give livestock operators more flexibility.

Even with reauthorization of relinquished permits, the number of AUMs could be reduced since the grazing matrix (Alternatives 3, 4, and 5) would seek to resolve conflict and the Lease Relinquishment Decision Tree (Alternative 2) would consider campsites, Mid-Columbia River steelhead habitat, and Washington ground squirrel habitat. In some cases, however, reauthorization could increase actual AUM use on individual allotments since reauthorization would allow grazing by a qualified lessee on an allotment that may have previously been in non-use.

### ***Effects of Alternative 2***

Issues mentioned during the public involvement process concerning ranching included access and OHV use. Many of these issues and others more specific to certain allotments have the potential to be addressed with voluntary relinquishment of grazing leases. Individuals and groups interested in access, as well as ranchers, would likely prefer solutions presented with the Lease Relinquishment Decision Tree. Potential decreases in available AUMs would likely be less preferred by individuals and groups interested in ranching and resource



use; however, non-market values would improve with consideration of campsites, Mid-Columbia River steelhead habitat, and Washington ground squirrel habitat.

Overall, some AUMs would be lost with reauthorization of relinquished permits since campsites, Mid-Columbia River steelhead habitat, and Washington ground squirrel habitat would be considered during reauthorization. Individuals and groups interested in resource protection would prefer this over the other alternatives given the special attention to these resources under this alternative. However, reauthorization on individual allotments could increase actual AUM use on that allotment since reauthorization would allow grazing by a qualified lessee on an allotment previously in non-use. This would be preferred by individuals and groups interested in ranching and resource use while still maintaining values important to those interested in resource protection.

### **Effects of Alternative 3**

Higher levels of AUMs in Alternative 3 than the other action alternatives suggest those interested in resource use and ranching would prefer this alternative over the other action alternatives. Individuals and groups interested in resource protection would prefer Alternative 3 over Alternative 2 given that some streams are buffered from grazing uses by 0.125 mile. However, those interested in resource use and ranching in the North Fork John Day acquired lands would likely prefer the other action alternatives as these lands are not given special consideration for grazing matrix calculations.

### **Effects of Alternative 4**

Under Alternative 4, lower levels of AUMs than the other alternatives suggest those interested in resource use and ranching would likely prefer the other alternatives. However, social factors would be more heavily weighted which might provide additional resolution of access and recreation conflicts than the other action alternatives. Individuals and groups interested in resource protection would prefer this alternative over the others given the combination of the special designation of North Fork John Day acquired lands and buffering along fish streams, and since ecological factors are more heavily weighted.

## **Access and Travel Management Effects on Social Groups**

### **Effects of Alternative 1**

Concerns were expressed during the public involvement process about decreases in the levels of areas open for motorized use. Relative to the action alternatives, more areas would be open for motorized use under the No Action Alternative. While motorized users would prefer this alternative, individuals and groups interested in resource protection, non-motorized uses, and area residents would likely least prefer this alternative. Conflicts between motorized users, area residents, and non-motorized users would remain unresolved. This alternative also would not address concerns that the BLM should provide additional motorized recreation opportunities such as rock-crawling and concentrated OHV use.

### **Effects Common to All Action Alternatives**

Individuals and groups interested in access and motorized recreation would favor Alternatives 1 or 3 over the other alternatives given higher motorized access opportunities provided under these two alternatives. However, under the action alternatives, travel on interim routes would be subject to future travel management planning, which could increase opportunities for these individuals and groups. Those interested in resource protection and non-motorized uses would likely prefer the action alternatives over existing management; adjustments to the transportation system to provide protection for soils, water quality, wildlife, and other resources could address some of their concerns.

### **Effects of Alternative 2**

Individuals and groups interested in access and motorized recreation would favor the existing situation over Alternative 2 given higher motorized access opportunities provided under Alternative 1 (existing management). Travel on interim routes would be subject to future travel management planning which could increase opportunities for these individuals and groups. Those interested in resource protection and non-motorized uses would likely prefer this alternative over existing management due to adjustments to the transportation system to provide protection for soils, water quality, wildlife, and other resources.



### **Effects of Alternative 3**

Individuals and groups interested in access and motorized recreation would likely prefer Alternative 3 over all other alternatives given a greater degree of motorized access opportunities.

### **Special Designations Effects on Social Groups**

#### **Effects of Alternative 1**

Under Alternative 1, no new areas would be managed for wilderness characteristics, no new ACECs would be established, and no land would be recommended for WSR designation by Congress. Therefore, individuals and groups who give high priority to resource protection would be less likely to support this alternative than the action alternatives. Those interested in less government regulation would likely prefer current management under this alternative given the regulation they associate with these land use designations.

#### **Effects Common to All Action Alternatives**

Under the action alternatives, several areas are proposed to be managed for wilderness characteristics, several new ACECs are proposed, and segments of the North Fork John Day River are recommended for congressional designation as WSR. Some individuals and groups interested in resource protection would favor the increase in these management designations since they prefer the increased resource protection they associate with these designations. Some believe designation as a Wild and Scenic River may attract more visitors which could contribute to increased resource damage. Individuals and groups interested in niche market opportunities would similarly favor the action alternatives, as unique area opportunities are enhanced under the John Day Paleontological ACEC or designation of Wild and Scenic River.

Concerns with possible Wild and Scenic River designation were frequently raised during the public involvement process. Area residents were often concerned about impacts of allowable uses on private property and the increased use and associated impacts to river resources. Designation would not impact allowable uses on private property, and increased use along the river would be managed to protect resources and minimize conflicts.

#### **Effects of Alternative 2**

The recommendation of more land under Alternative 2 than Alternative 1 for Wild and Scenic River designation by Congress would likely be preferred by those interested in resource protection. However, individuals and groups interested in less government regulation would likely prefer Alternative 1 given the additional regulation they associate with these area designations.

### **Fire Suppression Effects on Social Groups**

#### **Effects of Alternative 2**

Concerns from ranchers and area residents about fire suppression would be addressed under Alternative 2. Under existing management and the action alternatives, there would be 2,300 acres of prescribed fire for treatment of fuels to increase public safety and address resource concerns. Most local residents want fire to be fought as aggressively as possible to protect private property. Under the No Action Alternative, there is no direction for the WUI. Under the action alternatives, prescribed fire in the WUI would be used only for burning piles or broadcast burning in smaller areas where smoke and risk could be managed at acceptable levels. The RMP would tier to the National Fire Plan (USDA *et al.* 2000), which emphasizes the need to reduce hazardous fuels that pose a threat to Communities at Risk. In addition, vegetation management objectives (see Chapter 2) would manage vegetation and fuel loading to trend FRCC towards a condition class less prone to hazardous fire events. Ranchers and area residents would in large part favor the action alternatives over Alternative 1 given this new direction that addresses risk to public safety and resources.

### **Agricultural Land Management Effects on Social Groups**

#### **Effects of Alternative 2**

If existing management were fully implemented, only 180 acres would be leased. The action alternatives allow up to 400 acres of BLM-managed agricultural lands to be leased. The action alternatives would increase the spatial distribution and acreage available for agricultural leases by a small amount.



There are only slight difference in effects to prime farmlands between agricultural land management under Alternative 1 and the action alternatives. Agricultural land management under Alternative 2 and the other action alternatives places more emphasis on allowing fields along rivers to function as floodplains rather than protecting them from flooding. This would improve riparian condition and refresh nutrients important for crops, thereby improving the market value of agricultural land and non-market values given the resource protection many associate with improved riparian condition.

## **Resource Uses Effects on Social Groups**

### ***Effects of Alternative 1***

A number of individuals and groups expressed concern about limitations being placed on the availability of public lands for commercial uses such as livestock grazing, mineral development, and forest products. Some comments requested that the RMP focus on beneficial economic and social use of public lands, not locking them up from commercial uses or public access. The current levels, methods, and mix of multiple-use management would continue under this alternative, thus individuals and groups interested in resource use would likely favor this alternative.

## **Effects on Tribal Treaty Rights**

### ***Effects Common to All Action Alternatives***

Under the action alternatives, the BLM would manage vegetation within the acceptable range of variability, and would thus manage for diverse plant communities that contain healthy populations of a variety of native species. Enhancement of wildlife habitat and native plant communities provides increases in opportunity for tribal members to exercise tribal treaty rights such as hunting, fishing, and gathering on public lands. Consultation with tribes will increase communication and coordination for mutually beneficial resource management.

## **Effects to Disabled Users**

### ***Effects Common to All Alternatives***

Under all alternatives, individuals with disabilities could request a permit to travel on closed roads consistent with the Rehabilitation Act of 1973. Such access would be considered on a case-by-case basis by the Prineville District Office.

## **Effects on Environmental Justice**

### ***Effects Common to All Alternatives***

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low income populations. The Order further stipulates that agencies conduct their programs and activities in a manner that does not have the effect of excluding persons from participation in, denying persons the benefits of, or subjecting persons to discrimination because of their race, color, or national origin.

None of the proposed alternatives would be expected to have disproportionately high and adverse human health or environmental effects on minority and low income populations. All alternatives are expected to result in increases in employment and labor income over the next decade, which could benefit these populations but would remain a small share of total employment and labor income within the eight counties that comprise the plan area. Public involvement efforts for this project have been inclusive, and the BLM has considered input from persons or groups regardless of race, color, national origin, income, or other social and economic characteristics.

## **Cumulative Effects to Social and Economic Conditions**

By 2016, non-farm related employment in Gilliam, Jefferson, Morrow, Sherman, Umatilla, Wasco, and Wheeler counties is projected to increase by 12 percent. In the Grant, Harney, and Malheur county region, non-farm related employment is projected to increase by 11 percent (OLMIS 2007). In these same two regions, the population is projected to increase by 13 and 8 percent, respectively, by 2015 (State of Oregon DAS, 2007). These numbers might infer a few things about employment and changes in the labor force. If population increases are outpaced



by employment increases, there could be more retirees and unemployed moving into the area, or the aging labor force would not be replenished with younger workers.

This assertion is reflected in population projections by age groups provided by the Oregon Office of Economic Analysis. Between 2005 and 2015, the retirement age population (ages 65+) in the Gilliam, Jefferson, Morrow, Sherman, Umatilla, Wasco, and Wheeler county area is anticipated to increase by 37 percent, whereas ages that make up the labor force (ages 20 to 64) are expected to increase by 24 percent. Similarly in Grant, Harney, and Malheur counties, the retirement population and labor force are expected to change by 18 and 10 percent, respectively.

When the geographic area of interest is focused on just those counties completely contained within the plan area (Gilliam, Grant, and Wheeler counties), information on projections by age groups provides insight on how retirees, the labor force, and the younger age groups will change as a share of total population. Retirees will make up 19 percent of the total population in 2005 and increase to 22 percent by 2015. The labor force population made up approximately 56 percent of the total population in 2005 and will change to 57 percent by 2015. In 2005 youth and young adults (aged 10 to 24) made up 19 percent of the population, while they are projected to comprise only 15 percent in 2015. These changes reflect trends seen in existing demographic data; the younger generation is moving out as the population continues to age.

Wood products are an important part of the economy and lifestyles within the plan area. As discussed in Chapter 3, the BLM forest product harvests have comprised a small, but increasing, share of the total volume harvested in the area. This is due in large part to decreased harvests on national forests throughout the region. If current trends continue, the BLM harvest could continue to provide a small yet important part of total forest products to the area. Declines in lumber prices connected to larger national and international trends may put pressure on mills and logging operations to further slim operations. Niche markets for specialized forest products may become increasingly important.

Interest in niche markets was frequently mentioned during the public involvement process. In addition to forest products, organic beef and wind energy development are expanding in the plan area. Further investment in organic beef will occur with installation of a slaughtering facility in Grant County that will employ more than 20 people. Wind energy development on BLM land in the plan area may occur, but is highly speculative. Predicting the investment and development in other niche markets is similarly conjectural. However, the BLM has made every effort to enable future development of niche markets and alternative energy throughout the action alternatives. These projects would add to area employment and labor income while this plan would ensure protection for values not traded in markets such as scenery, biodiversity, and solitude.

In conclusion, employment and demographic changes in the area suggest that trends in social and economic well-being would continue. While employment and labor income contributions from BLM management to area totals are small, the land managed by BLM sustains area well-being and would continue to do so under all alternatives. This occurs largely through the provision of natural amenities and recreational opportunities that attract tourists and businesses and maintain the quality of life. None of the alternatives would alter the trends outlined above, but would provide opportunities for value-added businesses in niche markets, support recreational opportunities for a variety of demographic groups, and sustain quality of life for area residents and tourists who value the area.



# Chapter 5

## Consultation and Coordination









# Introduction

Though assigned the responsibility of managing more than 450,000 acres of Federal lands within the planning area, the BLM shares an interest in the management of these lands with other federal, state, and local governmental agencies; Native American Tribes; local residents; visitors; and other individuals and organizations.

Public, governmental, and tribal involvement is mandated by Council on Environmental Quality (CEQ) regulations for implementing NEPA. This mandate is reflected in the BLM planning Manual and Handbook. Tribal involvement is mandated by additional policy and law as described below.

More important than any law or regulation, it is just good sense to involve the public, other governmental agencies, and tribes in the planning process. Each of these entities has unique interests and knowledge. Sharing interests and knowledge in a collaborative setting contributes to the development of a plan that effectively addresses the significant planning issues and is more likely to meet local, regional, and national needs than a process without meaningful collaboration.

## Cooperating Agencies

The BLM convened a group of local, state, and federal agencies and tribal governments to collaborate with the BLM during development of the John Day Basin Resource Management Plan (Table 5-1). Representatives from these agencies and tribes brought vast knowledge and a broad range of interests to the table and enhanced the ability of the BLM to identify important issues and to address them with an appropriate range of alternatives.

This group met to review and develop content initiated by BLM staff. The Cooperator group played a key role in refining issue development, formulating alternatives, identifying key publics, and implementing a public involvement strategy. Cooperators kept the BLM informed of new concerns for their organizations or community relevant to the RMP process. The BLM specialists directly consulted with representatives to benefit from their knowledge of issues addressed in the planning process.

**Table 5-1. Potential and Actual Cooperators.**

<b>Tribes, Agencies and Governments Approached for Cooperator Status</b>	<b>Names of Representatives if Agency is Active Participant</b>
Baker County Commission	
Bonneville Power Administration KEC-4	
Burns Paiute Tribe	Tribal Chairperson (changes annually)
Confederated Tribes of the Warm Springs Reservation of Oregon	Linda Brown, Sue Malaney, Scott Turo
Confederated Tribes and Bands of the Yakama Nation	
Confederated Tribes of the Colville Reservation	
Confederated Tribes of the Umatilla Indian Reservation	
Oregon Department of State Lands	
Gilliam County	
Grant County	Dennis Reynolds, Diane Browning, Mark Webb, Scott Brion, Boyd Britton
Jefferson County Commissioners	
John Day Fossil Beds National Monument	
Malheur County	
Morrow County	
National Marine Fisheries Service	Walt Wilson
Nez Perce Tribe	



Table 5-1. Potential and Actual Cooperators.(cont.)

Tribes, Agencies and Governments Approached for Cooperator Status	Names of Representatives if Agency is Active Participant
Oregon Department of Fish and Wildlife	Jeff Neal, Tim Unterwegner, Ryan Torland
Oregon Department of Transportation	Ryan Franklin
Oregon Department of Parks and Recreation	Larry Miller, Ian Caldwell, Jan Houck, Shawn Zumwalt
Regional Ecosystem Office	
Sherman County	Gary Thompson
Umatilla County	
U.S. Department of Energy-Western Regional Office	
U.S. Environmental Protection Agency, Region 10	Theresa Kubo
USDI Fish and Wildlife Service	Jerry Cordova
USDA Malheur National Forest	Jennifer Harris
USDA Natural Resource Conservation Service	Lorraine Vogt
USDA Ochoco National Forest	
USDA R6 Lands And Minerals	
USDA Soil Conservation Service	
USDA Umatilla National Forest	Lori Seitz
USDA Wallowa-Whitman National Forest	
USDI BIA Northwest Regional Office	
USDI BIA Warm Springs Indian Agency	
USDI BLM Baker Resource Area	
USDI BLM Burns District Office	
USDI Bureau of Reclamation	
Wasco County Court	
Wheeler County Court	Jeanne Burch, Chris Perry

## Tribal Involvement

The BLM is guided by national policy and law and is committed to continuing consultation and cooperative management whenever possible. The three plans are silent on this topic except as modified for lands covered by the John Day River Management Plan. Regardless of this silence, the BLM recognizes its responsibility to provide to federally recognized tribal governments and individuals sufficient opportunity to contribute to land use decisions and that those concerns or issues are given proper consideration related to cultural, religious, and natural resource values. This trust relationship is acknowledged by the U.S. Constitution and is based upon negotiated treaties or other agreements that recognize the sovereignty of American Indian Nations to govern themselves as distinct political communities. Treaties such as The Treaty with the Tribes of Middle Oregon [with tribes now on the Warm Springs Reservation, signed June 25, 1855, ratified March 8, 1859 (14 STAT. 751); and the Treaty of 9 June 1855 (with tribes now located on the Umatilla Reservation) (12 Stat. 945)] acknowledged the rights of tribes to fish off-reservation at usual and accustomed stations and to hunt, gather resources, and pasture animals on public lands in common with other citizens of the United States. Though a treaty with the Burns Paiute was never ratified, formal recognition on October 13, 1972 established certain rights for that tribe as well.

In April 2003, the Confederated Tribes of the Warm Springs Reservation of Oregon, the BLM, the Forest Service, and the Bureau of Indian Affairs (BIA) signed a Memorandum of Understanding (MOU), "For the Purpose of Providing a Framework for Government-to-Government Consultation and Collaboration On resource Management Plans, Proposals, Actions, and Policies and to make a Statement of Mutual Benefits and Interests." Similar MOUs exist between the BLM and The Burns Paiute Tribe and the Confederated Tribes of the Umatilla Reservation. These three MOUs describe the rights and responsibilities of Cooperative Management and



Consultation. Consequently each tribe has been offered the opportunity to become involved in the planning process for the John Day Basin RMP.

## Local Government

County and municipal governments as representatives of local constituencies have a vested interest in land use planning involving federal lands. Lands managed by the BLM can provide areas for recreation as well as a source of income for residents of the planning area. The BLM-managed lands contain roads of importance to local communities and frequently provide the most desirable routes for utilities. Because of their awareness of the needs of local communities, it was important that representative of local government be involved in the planning process. Officials of Grant, Wheeler, Gilliam, Wasco, Umatilla, and Sherman counties participated in the early stages of the planning process.

## State Government

Several state agencies have jurisdiction over certain activities within the John Day Basin. As a result, it was important that these agencies be represented in the planning process. The state decided to limit participation in the planning process to three agencies: Oregon Parks and Recreation Department, Oregon Department of Fish and Wildlife, and Oregon Department of Transportation. These agencies were expected to represent all state interests in the planning process.

## Federal Government

In addition to the BLM, several federal agencies have resource management responsibilities within the John Day Basin. Several agencies participated in the John Day Basin RMP planning process. The United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service have oversight responsibilities for compliance with the Endangered Species Act. In addition, the USFWS has oversight responsibility for the compliance with the Migratory Bird Treaty Act and USFWS and BLM have joint responsibilities for implementation of E.O. 13186. The Environmental Protection Agency is required to review and evaluate all environmental impact statements. The Soil Conservation Service plays an important advisory role for private landowners in the John Day Basin and also has an interest in the management of public lands as well. The National Park Service and the USDA Forest Service each manage lands and resources adjacent to BLM-managed lands and have shared interests with the BLM in making management of lands and resources complementary, while recognizing different missions, whenever possible. Each of the above agencies participated in the planning process.

## Resource Advisory Council

The John Day-Snake Resource Advisory Council (RAC) is an official federal advisory committee, providing advice and recommendations on all aspects of public land management to the Bureau of Land Management's Prineville, Vale, and Spokane District Offices and the Umatilla, Wallowa-Whitman, Malheur, and Ochoco National Forests.

The RAC consists of local residents who represent broad interest categories: commodity interests, non-commodity interests, and community interests (see Table 5-2). The RAC members are selected and appointed by the Secretary of the Interior. Representation includes 15 members, as described below:

- Five members representing commodity interests such as grazing permittees or lessees, commercial timber, energy and mining, developed recreation and/or off-highway vehicle groups, and transportation and rights-of-way.
- Five members representing conservation interests such as environmental organizations, historic and cultural interests, conservation, and dispersed recreation.
- Five members representing community interests such as elected officials, Indian Tribes, State resource agencies, academicians involved in natural sciences, and the public-at-large.



The John Day-Snake RAC meets quarterly at various communities within the RAC area. The RAC schedules occasional field tours for specific projects or issues on their agenda. All RAC meetings are open to the public with a portion of each meeting reserved for the public to present or comment on issues for RAC consideration.

**Table 5-2. John Day/Snake Resource Advisory Council (RAC) Member List.**

Name	Represents	Subgroups working with BLM on Plan
Adriane P. Borgias	Transportation/Rights-of-Way	<b>Chair</b> -Energy Travel Management Subgroup JDBRMP Subgroup
Terry Drever-Gee	Energy and Minerals	
Daniel J. Forsea	Grazing Permittee	
Art Waugh	Commercial Recreation	<b>Chair</b> -Travel Management Subgroup JDBRMP Subgroup
William Lang	Historical/Archaeological	JDBRMP Subgroup
Michael Hayward	Timber	
David Riley	Wildlife (Wild horse and burro)	<b>Chair</b> -ESA
Timothy Unterwegner	Dispersed Recreation	<b>Co-Chair</b> -JDBRMP Subgroup Travel Management Subgroup
Berta Youtie, RAC Chair	Conservation	<b>Chair</b> -Noxious Weeds JDBRMP Subgroup
James Reiss	Dispersed Recreation	
Jeanne E. Burch	Elected Official, Wheeler County	JDBRMP Subgroup
Greg Ciannella	State of Oregon	JDBRMP Subgroup
Patricia Gainsforth	Public-at-large	
Lawrence Brown	Academician	
Patrick Dunham	Public-at-large	<b>Co-Chair</b> -JDBRMP Subgroup
<b>Federal Officials</b>	<b>Position</b>	
Don Gonzalez	District Manager, Vale BLM	
Ted Davis	Baker Resource Area Field Manager	
Debbie Henderson-Norton	District Manager, Prineville BLM	
Mark Wilkening	Public Affairs, Vale BLM	
Kevin Martin	Forest Supervisor, Umatilla National Forest	
Kate Klien	Forest Supervisor, Ochoco National Forest	
Teresa Raaf	Forest Supervisor, Malheur National Forest	
Monica Schwalbach	Forest Supervisor, Wallowa-Whitman National Forest	
Jody Weil	OR/WA BLM Deputy State Director-Communications	
Pam Robbins	OR/WA BLM RAC Coordinator	

At time of RMP publication, a position for a tribal representative was unfilled. In lieu, a second Public-at-large position was included on the RAC.

The BLM periodically updated the RAC on the progress of the planning effort. The RAC also provided assistance in developing alternatives for managing off-highway vehicle use on BLM-managed lands within the planning area.



# Public Involvement

The most critical element of cooperative management is public involvement. Congress has mandated that the BLM manage public lands for public benefit. At the same time the public is not a single cohesive entity. Rather, the BLM serves a diverse public with multiple and sometimes conflicting interests and positions about key issues. It is important that the diversity of public interests be represented during the planning process. Both the Coordination Group and the John Day/Snake RAC provide a representation of diverse public interests. However, it was the intent of the BLM planning team to provide the public with direct access to the planning process. This was accomplished in the following manner:

## 1. Public Scoping

This initial step, requesting the public provide information about public lands and identify problems associated with public lands in the John Day Basin was completed and involved the following activities:

- The BLM contracted the expertise of sociologists and anthropologists (James Kent Associates) to spend time in the planning area visiting with local officials, business owners, travelers, and residents to gather information on BLM land management concerns.
- The BLM cohosted, with the help of Wheeler County and the cities of John Day and Canyon City, several Economic Profile Workshops in the planning area, with the intent to explore economic and social trends within the area.
- The BLM hosted a series of meetings open to the public throughout eastern, central and western Oregon to gather public input and feedback on concerns and problems with BLM management in the planning area.

## 2. Publication and public review of the Analysis of the Management Situation (AMS).

After publication, the BLM hosted a series of open houses in eastern, central and western Oregon to gather public input and feedback on concerns and opportunities described in the AMS.

## 3. Public representation in the development of the Draft Resource Management Plan and Environmental Impact Statement occurred through interaction with and guidance provided by the John Day-Snake RAC. A RAC subgroup provided specific input to travel management and OHV issues. A citizen's group led by Mark Webb, Grant County Judge and RAC subgroup member, provided detailed comments relative to management options for the Little Canyon Mountain area.

After publication of the Draft, the BLM presented proposed actions in the Draft and gathered public comment at a series of open houses in eastern, central, and western Oregon and on request from interested organizations and groups. Draft documents and maps were made available on the planning web page at the beginning of the public comment period. Public comments were accepted from October 30, 2008 to January 29, 2009. Comments were submitted via U.S. mail, direct e-mail, e-mail generated from the planning web page, orally at open houses, or via telephone.

Modification of proposed actions between Draft RMP/EIS and Proposed RMP/Final EIS were developed based on the 1,385 unique public comments and input from the John Day-Snake RAC, and John Day Basin RMP cooperators.

# Future Public Involvement Opportunities

Public input will be solicited regarding further development of a final Wilderness Management Plan for the Spring Basin Wilderness and final Travel Management Plans. Notification for opportunities to participate in these two efforts will be provided through mailings, newspapers or other media, and the planning web site.

- The public is encouraged to review Appendix U (Interim Wilderness Management Plan).
- Criteria to be used in the Final Travel Management Plan are displayed in Chapter 2, Travel Management.



## Information Sharing

The BLM will continue to use a number of information sharing techniques to give people the opportunity to share new information and to be kept up-to-date on the planning process. The following is a brief summary of some of those techniques.

### John Day Basin Resource Management Plan Web Site

The John Day Basin RMP web site will provide information such as plan updates, meeting dates, and plan schedule. The address is <http://www.blm.gov/or/districts/prineville/index.htm>.

### Plan Updates

Periodically, updates of the plan's progress will be prepared, posted to our web site, and mailed to our mailing list. News releases in local newspapers, as well as feature stories and broadcasts on local television and/or radio stations, occur with major public meetings.



# List of Preparers

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**Comment letters from Congressional Representatives;  
Indian Tribes; and Federal, State, and Local Government  
Agencies are provided in Appendix T.**







# Glossary

**100-year flood**—Based on statistical averages, the size of flood that has a 1 in 100 chance of occurring during any year. For the plan area, the 100-year flood is approximated by the area inundated at a depth of two times bankfull width.

**Abiotic**—pertaining to the nonliving parts of an ecosystem, such as soil, rock, air, and water.

**Acceptable Range of Variability (ARV)**—Management actions are within the ARV when they direct vegetative communities and characteristics toward the types and amounts of seral structural communities and conditions identified as appropriate for a given BPS. Each BPS has an identified range of vegetative conditions and distributions that occurred based on site potential or Biophysical setting (elevation, aspect, precipitation, etc.) and “pre-European” disturbance regimes. While this does not mean replicating exact conditions from a selected date in the past, this approach manages the ecosystem for a range in, and combination of patterns, patch sizes, species distribution, and seral/structural stages that are consistent with the site’s potential and the expected fire frequency, intensity, and distribution. The ARV is often broad enough to encompass social as well as ecological goals.

**Access**—ability of public land visitors to reach the areas they wish to visit.

**Access Statement**—a legal right to cross the land granted to the public by a landowner.

**Acre**—a unit of area used in land measurement equal to 43,560 square feet. There are 640 acres in one square mile.

**Active Restoration**—restoration that requires human expenditure of energy. For example, cutting down a tree and placing it in a stream channel. Active restoration includes, but is not limited to, riparian plantings, reintroduction of large wood, floodplain development, and projects to improve watershed function (e.g., sediment routing, conveying peak and base flow).

**Adit**—a nearly horizontal shaft used for giving access to a mine or for drainage.

**Advisory Council on Historic Preservation**—established by the National Historic Preservation Act of 1966 to play a key role in the evaluation, nomination, and treatment of National Register properties.

**Agricultural Land**—portions of the landscape that are capable of cultivating crops and irrigated pasture. These lands frequently occupy irrigable floodplains along rivers and streams.

**Agricultural Use**—production and harvest of crops through farming.

**Airshed**—a subset of air basin, the term denotes a geographical area that shares the same air because of topography, meteorology, and climate.

**Albedo**—ratio of incident light or electromagnetic radiation reflected by a surface, especially of a celestial body to that received by it.

**Allotment**—a specific portion of public land allocated for livestock grazing, typically with identifiable or fenced boundaries and permitted for a specified number of livestock.

**Allotment Management Plan (AMP)**—a BLM document that directs management of livestock grazing on a specific area of public land.

**Allowable Sale Quantity (ASQ)**—quantity of timber that may be sold from an area covered by a forest management plan during a time period specified by the plan. ASQ is usually expressed as an average annual quantity.



**Analysis of the Management Situation (AMS)**—step 4 of a BLM land use planning project; a comprehensive documentation of the present conditions of the resources, current management guidance, and opportunities for change.

**Andesite**—volcanic rock with a silicon dioxide ( $\text{SiO}_2$ ) composition between 52 and 63 percent by weight. Its color is gray to black and it erupts at temperatures between  $900^\circ$  and  $1,100^\circ$  C.

**Animal Unit Month (AUM)**—amount of forage required to sustain one cow and calf for one month.

**Anthropogenic**—resulting from the influence of human beings on nature.

**Appropriate (Fire) Response**—specific actions taken in response to a wildfire to implement protection and fire management objectives.

**Area of Critical Environmental Concern (ACEC)**—a type of special land use designation specified within the Federal Land Policy and Management Act (FLPMA), used to protect areas with important resource values in need of special management.

**Area of Traditional Cultural Significance**—for the purposes of this plan, those locations used by Indian people to maintain their values, beliefs, and cultural identity, including, but not limited to, traditional plant collecting areas, fishing stations, or places for practicing traditional religious beliefs.

**Ash**—volcanic material consisting of rock, volcanic glass, and mineral fragments less than 2 millimeters in diameter.

**Available** (in reference to energy, minerals, rights-of-way, communication sites, and renewable energy projects)—areas available for the specified use, consistent with RMP goals and objectives, and in concert with the protection of natural resources within the planning area through terms, conditions, and stipulations.

**Avoid or Avoidance Area**—generally, areas available for locatable-leasable-salable minerals, rights-of-way, facilities, geothermal development, and renewable energy projects with stipulations, terms and conditions, as follows:

For *locatable* minerals: terms, conditions, or other special considerations are needed to protect other resource values while conducting activities under the operation of the mining laws.

For *salable* minerals: terms, conditions, or other special considerations are needed to protect resource values while operating under the minerals materials regulations.

For *leasable* minerals: areas are open to leasing, but subject to moderate constraints such as seasonal and controlled surface use restrictions. Mitigation may also be required to meet resource objectives established in the RMP.

**Bankfull Stage**—the elevation of the floodplain adjacent to the active stream channel.

**Bankfull Width**—the width of the stream channel at bankfull stage. Bankfull channel indicators included breaks in slope, the tops of point bars, and changes in vegetation.

**Basalt**—a dark-colored volcanic rock with less than 52% silicon dioxide by weight. Its temperature when erupting ranges from  $1,100^\circ$  to  $1,250^\circ$ C. Basalt is less viscous (more fluid) than andesite and rhyolite and is capable of flowing several tens of kilometers.

**Benefits Based Recreation (BBR)**—managing recreation resources for positive or beneficial experiences and outcomes by participating in recreational activities, rather than just managing for a recreation activity by itself. BBR provides positive outcomes that benefit individuals, communities, economies, and the environment by focusing on experiences and outcomes that result from recreation activities.

See [http://www.blm.gov/wo/st/en/prog/Recreation/national\\_recreation/recreation\\_planning.html](http://www.blm.gov/wo/st/en/prog/Recreation/national_recreation/recreation_planning.html).



**Best Management Practices (BMPs)**—a set of practices that, when applied during implementation of management actions, ensures that negative impacts to natural resources are minimized. BMPs are applied based on site-specific evaluations and represent the most effective and practical means to achieve management goals and objectives for a given site.

**Biocriteria**—biological criteria that describe qualities that must be present to support a desired condition in a waterbody. They serve as the standard against which ecological assessment results are compared. The presence, condition and numbers of types of fish, insects, algae, plants, and other organisms are data that together provide direct, accurate information about the health of specific bodies of water.

**Biodiversity (Biological Diversity)**—variety and variability among living organisms and the ecological complexes in which they occur (ICBEMP 2000).

**Biological Control Agent**—the use of nonnative agents, including invertebrate parasites and predators (usually insects, mites, and nematodes) and plant pathogens, to reduce populations of nonnative, invasive plants.

**Biomass**—dry weight of organic matter in plants and animals in an ecosystem, both above and below ground.

**Biophysical Settings (BpS)**—represents the vegetation that may have been dominant on the landscape prior to Euro-American settlement and are based on both the current biophysical environment and an approximation of the historical disturbance regime. The LANDFIRE BpS models describe vegetation, geography, biophysical characteristics, succession stages, and disturbance regimes for each BpS and some of the major disturbance types affecting these ecosystems prior to significant alterations by European settlers.

**Biotic**—living.

**Board Foot**—amount of wood contained in an unfinished board 1 inch thick, 12 inches long, and 12 inches wide, commonly abbreviated BF; MBF = one thousand board feet; MMBF = one million board feet.

**Broadcast Burning**—burning natural fuels as they are, with no piling or windrowing.

**Broadcast Spraying**—an imprecise, active treatment method for dispensing a pesticide that is prone to pesticide drift and residue.

**Broad Scale**—a large, regional area, such as a river basin, and typically a multi-state area.

**Bureau of Land Management (BLM)**—government agency with the mandate to manage Federal lands under its jurisdiction for multiple uses.

**Bureau Sensitive Species**—species eligible as federally listed or candidate status, state listed or candidate (plant) status, or on List 1 in the Oregon Natural Heritage Database, or otherwise approved for this category by the State Director.

**Bureau Tracking Species (TS)**—species for which more information is needed to determine status within the state, or which no longer need active management. Districts are encouraged to collect occurrence data to enable an early warning for species that may become threatened or endangered in the future. Until status of such species changes to federal or state listed, candidate or assessment species, “tracking species” will not be considered as special status species for management purposes.

**Candidate Species**—plants and animals that have been studied and the U.S. Fish and Wildlife Service has concluded that they should be proposed for addition to the Federal endangered and threatened species list. These species have formerly been referred to as category 1 candidate species. From the February 28, 1996 Federal Register, page 7597: “those species for which the Service has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list but issuance of the proposed rule is precluded.”



**Capability**—highest ecological status an area can attain given political, social, or economical constraints.

**Cell**—unique ecosystem type used by the Oregon Natural Heritage Plan to inventory, classify, and evaluate natural areas. Cells contain one or more ecosystem elements, which are assemblages of integrated organisms plus the environment supporting them.

**CCF**—100 cubic feet of solid wood.

**Cinder**—a frothy form of basalt formed by expanding gases during an eruption.

**Cinder Cone**—a cone-shaped volcano created by the accumulation of cinders around a vent, formed as an individual volcano or in groups on the flanks of larger volcanoes.

**Cinnabar**—mercury sulfide, an ore of mercury.

**Clear-cut**—a section of forest or woodlands where all trees have been cut down.

**Climax**—culminating stage of plant succession for a given environment; the vegetation conceived as having reached a highly stable condition.

**Closed (OHV)**—Under 43 CFR 8340, an area where off-road vehicle use is prohibited. Use of off-road vehicles in closed areas may be allowed for certain reasons; however, such use shall be made only with the approval of the authorized officer.

**Closed** (in reference to energy, minerals, rights-of-way, communication sites, and renewable energy projects)—areas where it is determined that other land uses or resource values cannot be adequately protected with even the most restrictive stipulations. Generally, the specified use is not allowed or, in the case of Wilderness Study Areas, must comply with the Interim Management Policy. Closed areas must be petitioned for withdrawal. Where appropriate, validity of existing claims may be contested as part of the withdrawal process. These areas are not available for locatable-leasable-salable minerals/energy, rights-of-way, facilities, geothermal development, and renewable energy projects, as follows:

For *locatable* minerals: these areas are recommended for withdrawal from the mining laws for locatable exploration or development. Some withdrawals may already exist.

For *salable* minerals: these areas are closed to mineral material disposal.

For *leasable* minerals: these areas are closed to leasing and these areas are recommended for withdrawal.

**Collaboration**—a formalized process of identifying and involving interactive participants in different parts of the analysis process. Collaboration is expected to result in some level of informed consent by all participants concerning the issues and range of alternatives. For the purposes of this plan, that is intended to include members both exempt from and subject to the Federal Advisory Committee Act.

**Common Use Area**—a generally broad geographic area from which BLM can make disposals of mineral materials to many persons, with only negligible surface disturbance. The use is dispersed throughout the area.

**Communication Site**—(1) a hilltop or favorable signal receiving and transmitting location where a collection of facilities are sited; (2) a facility consisting of a small building and tower used for transmission or reception of radio, television, telephone, or other electronic signals.

**Community Pit**—a relatively small, defined area from which BLM can make disposals of mineral materials to many persons. The surface disturbance is usually extensive in the confined area.

**Conglomerate**—a clastic sedimentary rock composed of rounded to subangular stones (larger than 2 millimeters in diameter) cemented in a matrix of sand or silt.



**Connectivity (of habitats)**—linkage of similar but spatially separated vegetative stands (such as mature forests) by patches, corridors, or “stepping stones” of like vegetation across the landscape; also, the degree to which similar landscapes are so linked (PNW GTR-328, 1994).

**Consultation**—formal and informal consultation as defined by laws such as the National Historic Preservation and Endangered Species Acts. Also, any input formally requested for analysis purposes from any internal or external source.

**Cooperators**—tribal, local, state, or federal agencies with special expertise related to plan issues or that have legal jurisdiction within the planning area.

**Critical Habitat**—defined in BLM Manual 6840 as an area designated as such and listed in 50 CFR Parts 17 and 226; any air, land, or water area (exclusive of those existing man-made structures or settlements that are not necessary to the survival and recovery of a listed species) and constituent elements thereof, the loss of which would appreciably decrease the likelihood of the survival and recovery of a listed species or a distinct segment of its population. The constituent elements of critical habitat include, but are not limited to, physical structure and topography, biota, climate, human activity, and the quality and chemical content of land, water, and air. Critical habitat may represent any portion of the present habitat of a listed species and may include additional areas for reasonable population expansion. The federal definition of critical habitat is: (i) the specific areas within the geographic area occupied by the species, at the time it is listed . . . on which are found those physical and biological features (a) essential to the conservation of the species and (b) which may require special management considerations or protections; (ii) specific areas outside of the geographical area occupied by the species, at the time it is listed . . . upon a determination of the Secretary that such areas are essential for the conservation of the species; and (iii) except in those circumstances determined by the Secretary, critical habitat shall not include the entire geographical area which can be occupied by the threatened or endangered species (ESA Section 3).

**D84 and D50**—different stream channels that transport different sizes and amounts of sediment. Dx denotes the particle size for which X percent of the stream bed material is finer. For example, D50 indicates the median particle size in which 50% of the bed material is finer. If the D50 is 10 inches, then 50% of the sediment is smaller than 10 inches. The cumulative distribution of measured sediment particles is unique to each stream. However, measures like D50 and D84 standardize calculations.

**Detrimental Soil Impacts**—impacted areas that are unable to recover to viable populations of native perennial vegetative cover within 2 years following a use disturbance without applying restoration activities.

**Disturbance**—any event that alters the structure, composition, or function of terrestrial or aquatic habitats (PNW GTR-328, 1994).

**Disturbance Activities (wildlife)**—include, but are not limited to, people walking; running; riding a bike, horse, or motorized vehicle; or creating loud noises (chain sawing, blasting). Whether activities actually disturb is a function of species, proximity, screening, and commonness of activity.

**Disturbance Regime**—pattern of intervals between disturbance and severity of disturbance. For landscapes, this can be for a given disturbance, such as fire or for a complex of disturbances (Johnson and O’Neil 2001).

**Dormant (Season)**—a state or time when there is minimal metabolic activity with cessation of growth, either as a reaction to adverse conditions or as part of an organism’s normal annual rhythm.

**Ecological Integrity**—in general, refers to the degree to which all ecological components and their interactions are represented and functioning; the quality of being complete; a sense of wholeness. Areas of high integrity would represent areas where ecological function and processes are better represented and functioning than areas rated as low integrity (ICBEMP 2000).

**Ecological Site Inventory (ESI)**—basic inventory of present and potential vegetation of BLM rangelands. Ecological sites are differentiated on the basis of soil type and kind, proportion, or amount of plant species.



**Ecology**—science of the inter-relationships between organisms and their environment; from the Greek Oikos meaning “house” or “place to live.”

**Ecoregions**—variations in landform that provide conditions for development of varying combinations of plants and animals.

**Ecosystem**—a spatially explicit, relatively homogeneous unit of the earth that includes all interacting organisms and components of the abiotic environment within its boundaries. An ecosystem can be of any size (e.g., a log, pond, field, forest, or the earth’s biosphere).

**Ecosystem Health**—a condition where the parts and functions of an ecosystem are sustained over time. The system’s capacity for self-repair is maintained such that goals for uses, values, and services of the ecosystem are met. Also includes forest health, rangeland health, and aquatic system health.

**Ecosystem Management**—use of a “whole-landscape” approach to achieve multiple use management of public lands by blending the needs of people and environmental values in such a way that these lands represent diverse, healthy, productive, and sustainable ecosystems.

**Ecotone**—a boundary or zone of transition between adjacent communities or environments, such as the boundary between a forest and a meadow or the boundary of a clear cut next to a mature forest stand. Species present in an ecotone are intermixed subsets of the adjacent communities.

**Edge Effect**—tendency for a transitional zone between communities (an ecotone) to contain a greater variety of species and more dense populations of species than either community surrounding it (Johnson and O’Neil 2001).

**Eligibility**—qualification of a river for inclusion into the National Wild and Scenic Rivers System through determination that it is free-flowing and with its adjacent land area possesses at least one river-related value considered to be outstandingly remarkable.

**Endangered Species**—any species defined under the Endangered Species Act as being in danger of extinction throughout all or a significant portion of its range. Listings are published in the Federal Register.

**Endemic Species**—plants or animals that occur naturally in a certain region and whose distribution is relatively limited to a particular locality (ICBEMP 2000).

**Environmental Assessment (EA)**—one type of document prepared by Federal agencies in compliance with the National Environmental Policy Act that portrays the environmental consequences of proposed Federal actions that are not expected to have significant impacts on the human environment.

**Environmental Impact Statement (EIS)**—one type of document prepared by Federal agencies in compliance with the National Environmental Policy Act that portrays the environmental consequences of proposed major Federal actions that are expected to have significant impacts on the human environment (see *Environmental Assessment*).

**Ephemeral Stream**—a stream that flows only in direct response to precipitation, and whose channel is at all times above the water table. On average, these streams flow continuously less than 30 days per year.

**Erosion (Accelerated)**—erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, i.e., fire that exposes the surface.

**Exceedance**—a measured level of an air pollutant higher than the national or state ambient air quality standards.

**Existing Management Situation (EMS)**—a component of the Analysis of the Management Situation; a description of the existing management direction governing resource management programs of a planning area.



**Extensive Recreation Management Area (ERMA)**—locations where explicit recreation management, personnel and funding is not required to manage recreation resources. Minimal management actions are adequate to accomplish BLM's stewardship responsibilities. Significant recreation opportunities and problems are limited and management is not needed for specific recreation opportunities. Also see *Special Recreation Management Areas* and *Recreation Management Zones*.

**Extirpated**—having become extinct in a specific area while the species as a whole continues to exist elsewhere.

**Facultative**—capable of functioning under varying environmental conditions. Also see *Obligate*.

**Federal Land Policy and Management Act of 1976 (FLPMA)**—a law mandating the Bureau of Land Management to manage lands under its jurisdiction for multiple uses.

**Final Transportation Management Plan**—a network of roads and trails identified through a comprehensive travel management planning process (completed consistent with direction contained in the IM-OR-2009-050—Travel Management Guidelines for Eastern Oregon & Washington and this RMP). These roads and trails will be identified as the BLM transportation network for the relevant planning area. Roads selected may or may not include those roads and trails identified in the interim transportation system.

**Fine Scale**—a single landscape such as a watershed or subwatershed.

**Fire Cycle**—average time between fires in a given area or a given plant community.

**Fire Frequency**—return interval of fire.

**Fire Management Plan**—a plan to identify and integrate all wildland fire management guidance, direction and activities required to implement national fire policy and fire management direction. Direction is drawn from (a) Federal Wildland Fire Management Policy and Program Review (1995 and 2001), (b) Interagency Fire Management Plan Template, (c) A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment, (d) 10-Year Comprehensive Strategy Implementation Plan, (e) Department of the Interior Manual, (f) Bureau of Land Management Manual, and (g) relevant Resource Management Plans. The BLM lands within the John Day Basin are covered within the Central Oregon Fire Management Service (COFMS) Fire Management Plan (current version is 2007).

**Fire Preparedness**—activities that lead to a safe, efficient, and cost effective fire management program in support of land and resource management objectives through appropriate planning and coordination.

**Fire Regime**—the frequency, predictability, intensity, seasonality, and extent characteristics of fires in an ecosystem.

**Fire Regime Condition Class (FRCC)**—measure of the degree of departure of vegetative conditions from a reference condition known as the biophysical setting.

FRCC 1 represents ecosystems with low (<33 percent) departure and that are still within the estimated historical range of variability during a specifically defined reference period;

FRCC 2 indicates ecosystems with moderate (33 to 66 percent) departure; and

FRCC 3 indicates ecosystems with high (>66 percent) departure from reference conditions.

**Floodplain**—a relatively flat area that borders a stream that is composed of deposited materials from the stream and is subject to periodic flooding unless protected artificially.

**Flood-prone Area**—area that is flooded when water depth equals two times the maximum bankfull depth of the stream channel. In the Pacific Northwest, the area flooded when the water depth equals two times the bankfull depth has been shown to approximate the 100-year floodplain.



**Flow**—volume of water in a river passing a given point in a given period of time, usually expressed in terms of cubic feet per second or cubic meters per second.

**Forestland**—land stocked with at least 10 percent live trees or land formerly having such tree cover and not currently developed for non-forest use.

**Fugitive Dust**—dust particles that are introduced into the air through certain activities such as soil cultivation and vehicles operating on open fields or dirt roadways.

**Functional-At-Risk**—riparian-wetland areas that are in functional condition, but an existing soil, water, or vegetation attribute makes them susceptible to degradation.

**Game Species**—wildlife species hunted for sport.

**Green Strip**—a strip where fire spread and intensity are reduced through one or more of the following actions: removal of ladder fuels; decreasing the density, height, and/or spacing of shrub species; limiting or removing annual grass components; or planting species that meet fire spread and intensity objectives.

**Ground Water**—water filling all the unblocked pores of the material below the water table.

**Guzzler**—man-made structure that collects, stores, and dispenses water (from rain, snow, and sometimes condensation). The size and style of collection and dispensing apparatus dictates the number and type of wildlife that can utilize the water.

**Habitat Fragmentation**—splitting or isolating of patches of similar habitat, typically forest cover (but could also apply to grass fields, shrub patches, and other habitats). Habitat can be fragmented from natural conditions, such as thin or variable soils, or from management activities or development such as clear-cut logging, agriculture, or residential development.

**Hibernaculum**—a place where any animal hibernates. Two distinct habitats are recognized as critical for the persistence of a bat population—a winter hibernaculum and a summer roosting colony. A winter bat hibernaculum is a place, usually a cave or a mine, that provides a constant temperature and protection for winter hibernation.

**Historic Condition**—as used in this text, the condition of lands and ecosystems prior to European settlement. In central Oregon, European settlement occurred during the period from approximately the 1850s to 1900. An approximation of these conditions is drawn from written and photographic accounts from the period and is used to determine the range of variability for plant and animal species across a landscape (Ochoco NF Viable Ecosystems Management Guide 1994).

**Historic Range of Variability (HRV)**—typical fluctuations of processes or functions, and the typical proportions of ecosystem elements in an area over a period of time when the ecosystem was not significantly affected by European settlement and management. HRV is the amplitude or minimum-maximum ranges of “natural” conditions.

**Ignimbrite**—a volcanic rock formed by the welding together of tuff material from an explosive volcanic eruption.

**Important Habitat**—a general term that includes seasonal habitats, such as winter ranges and breeding sites; habitat structure, such as snags and down logs; and unique features, such as cliffs and caves.

**Impoundment**—body of water formed by any man-made structure.

**Information Sharing**—a process designed to keep everyone informed about what is happening in the planning effort. This includes but is not limited to published material on a variety of media, and management and public briefings and/or presentations.



**Initial (fire) Attack**—a planned response to a wildfire given the wildfire's potential fire behavior. The objective of initial attack is to stop the fire and put it out in a manner consistent with firefighter and public safety and values to be protected.

**Interdisciplinary**—involving more than one discipline or resource management program.

**Interim Transportation System**—a preliminary road and trail network identified to provide public access on BLM lands until a final transportation plan is completed.

**Interior Columbia Basin Ecosystem Management Project (ICBEMP)**—a project conducted during the 1990s and early 2000s that examined the effects (on a large, regional scale) of past and present land use activities on the Interior Columbia River Basin ecosystem and a small part of the Great Basin ecosystem.

**Intermittent Stream**—a stream that flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow in mountainous areas. On average, these streams flow continuously for 30 days per year.

**Interrupted Stream (flow)**—streams where wet sections of stream channel are interrupted with dry sections of channel.

**Issue**—an opportunity, conflict, or problem about use or management of public land resources. The resolution of issues is the basis for preparing the resource management plan.

**Key Wildlife Habitat**—habitats where the spatial extent of potential or existing habitats have been refined beyond a general habitat description and mapped for locally important or special status species, including the following habitats: antelope year round, deer summer, deer winter crucial, elk summer, elk winter, elk winter critical, sage-grouse, Washington ground squirrel, peregrine nest potential, peregrine falcon, bald eagle winter roost potential, and bald eagle winter roosts.

**Landscape**—all the natural features that distinguish one part of the land from another. A spatially heterogeneous area with repeating patterns, similar climate and landform, and the associated disturbance regimes.

**Lands With Wilderness Characteristics (LWC)**—lands that have been inventoried and found to contain wilderness characteristics as defined in Section 2(c) of the Wilderness Act of 1964.

**Lava Tube**—a cave formed by the draining of molten lava from a channel covered by a surficial crust.

**Leasable Minerals**—minerals that may be leased to private interests by the Federal government and includes oil, gas, geothermal, coal, and sodium compounds.

**Leave Tree**—a tree left standing in an area where thinning or harvest has occurred.

**Lek**—an area used by sage-grouse for courtship and mating.

**Lentic**—areas occasionally or frequently inundated or saturated by standing surface or ground water. The vegetation capability is different than if the area was not inundated or saturated. Lentic areas are influenced by standing water, while lotic areas are influenced by running water.

**Limited Area**—Under 43 CFR 8340, an area restricted at certain times, in certain areas, and/or to certain vehicular use. These restrictions may be of any type, but can generally be accommodated within the following type of categories: numbers of vehicles; types of vehicles; time or season of vehicle use; permitted or licensed use only; use on existing roads and trails; use on designated roads and trails; and other restrictions.

**Linear Features**—man-made lines across the landscape, such as roads, trails, routes, ways, pipelines, ditches, and other features.



**Litter**—dead remains of plants, usually lying on the soil surface.

**Loam**—a soil textural class composed of roughly equal amounts of sand, silt, and clay.

**Locatable Minerals**—minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

**Lotic**—areas that are occasionally or frequently inundated or saturated by running water. The vegetation capability is different than if the area was not inundated or saturated. Lotic areas are influenced by running water, while lentic areas are influenced by standing water.

**Main Stem**—main channel of the river in a river basin, as opposed to the streams, forks, and smaller rivers that feed into it. For the John Day Basin, the Main Stem John Day River flows 284 miles from its source in the Strawberry Range to its mouth at River Mile 218 of the Columbia River.

**Management Concern**—procedures or land-use allocations that do not constitute issues but, through the RMP/EIS preparation process, are recognized as needing to be modified or needing decisions made regarding management direction.

**Management Framework Plan (MFP)**—an older generation of land use plans developed by the Bureau of Land Management. This generation of planning has been replaced by the Resource Management Plan (RMP).

**Management Opportunities**—a component of the analysis of the management situation; actions or management directions that could be taken to resolve issues or management concerns.

**Marginal Cover**—a stand of coniferous trees 10 or more feet tall with an average canopy closure equal to or more than 40%.

**Mesic**—pertaining to sites or habitats characterized by intermediate moisture conditions, i.e., neither decidedly wet nor dry.

**Microbiotic Crusts**—lichens, mosses, green algae, fungi, cyanobacteria, and bacteria growing on or just below the surface of soils.

**Migratory Bird Species of Concern**—Those species listed in the periodic report, *Birds of Conservation Concern*, published by the Fish and Wildlife Service Division of Migratory Bird Management; priority migratory bird species documented in comprehensive bird conservation plans (North American Waterbird Conservation Plan, United States Shorebird Conservation Plan, Partners in Flight Bird Conservation Plan); species or populations of waterfowl that the North American Waterfowl Management Plan identifies as a high, or moderately high, continental priority; listed threatened and endangered bird species in 50 CFR 17.11; or Migratory Bird Treaty Act-listed game birds below desired population sizes.

**Mineral Estate**—refers to the ownership of minerals at or beneath the surface of the land.

**Minor Wildlife Emphasis**—designated areas where wildlife typically receives a lower level of consideration to most other resource management programs. Generally, guidelines are tied to minimum legal requirements identified in the sections on “common” guidance (Standards for Land Health, BLM Special Status Species Policy [6840]), and the Endangered Species Act.

**Mitigating Measures**—modifications of actions that (a) avoid impacts by not taking a certain action or parts of an action, (b) minimize impacts by limiting the degree or magnitude of the action and its implementation, (c) rectify impacts by repairing, rehabilitating, or restoring the affected environment, (d) reduce or eliminate impacts over time by preservation and maintenance operations during the life of the action, or (e) compensate for impacts by replacing or providing substitute resources or environments.



**MMBF**—Thousand thousand board feet or million board feet of timber.

**Monitoring and Evaluation**—collection and analysis of data to evaluate the progress and effectiveness of on-the-ground actions in meeting resource management goals and objectives.

**Multiple Use**—management of public land and its resources to best meet various present and future needs of the American people. This means coordinated management of resources and uses.

**National Environmental Policy Act of 1969 (NEPA)**—a law requiring all Federal agencies to evaluate the impacts of proposed major Federal actions with respect to their significance on the human environment.

**National Register of Historic Places (NRHP)**—established by Congress with the passage of the National Historic Preservation Act of 1966; an ever increasing, formal list of sites that are culturally significant according to specific criteria.

**National Wildlife Refuge (NWR)**—an area administered by the U.S. Fish and Wildlife Service for the purpose of managing certain fish or wildlife species.

**Native Road Surface**—surface of road with little to no mechanical improvement to gradient, slope, or surface. Roads are most often user created with no additional rock or gravel added to stabilize the surface.

**90th Percentile Summer Weather**—the point where an index weighted toward fuel conditions exceeds at least 90% of observations ever recorded for an area. The implication of exceeding the 90th percentile is that if an ignition occurs in a wildland setting, then fire behavior is likely to be extreme.

**Non-functional**—riparian-wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows and, thus, are not reducing erosion, improving water quality, etc.

**Non-game Species**—wildlife species that are not hunted for sport.

**No Surface Occupancy (NSO)**—Generally, the specified use is not allowed to disturb or occupy the surface or, in the case of Wilderness Study Areas, must comply with the Interim Management Policy. This restriction applies to leasable-salable minerals/energy, rights-of-way, facilities, geothermal development, and renewable energy projects, as follows:

For *salable* minerals: these areas are closed to mineral material disposal unless the activity can occur without surface disturbance and/or occupation.

For *leasable* minerals: these resources may be leases, as long as the testing and operations do not disturb and/or occupy the surface.

**Noxious Weed**—a plant specified by law as being especially undesirable, troublesome, and difficult to control.

**Obligate**—able to exist or survive only in a particular environment or by assuming a particular role.

**Obliterate**—resloping a hillslope to eliminate appearance of a human-caused feature, restore vegetation, add organic matter, eliminate compaction, and restore the hillslope process.

**Obsidian**—a volcanic glass with a bulk composition equivalent to that of rhyolite except that obsidian has lower water content.

**Occupancy**—the taking, maintaining, or holding possession of a camp or residence on public land either by personal presence or leaving property at the location.



**Off-Highway Vehicle (OHV)** – In the state of Oregon, off-highway vehicles are divided into three types, Class I, II, or III, as defined below.

**OHV Class I**

Vehicles 50 inches wide or less, and

- Dry weight of 800 pounds or less.
- Have saddle or seat.
- Travels on three or more tires.

**OHV Class II**

For vehicles more than 50 inches wide, or

- Dry weight of more than 800 pounds

**OHV Class III**

For vehicles riding on two tires, and

- Dry weight of less than 600 pounds

**OHV Closed Area**—an area where off-road vehicle use is prohibited. Use of off-road vehicles in closed areas may be allowed for certain reasons; however, such use shall be made only with the approval of the authorized officer.

**OHV Designations**—allowed motorized use (also see *OHV Open Area*, *OHV Limited Area*, *OHV Closed Area*) defined by BLM according to 43 CFR subparts 8341 and 8342.

**OHV Limited Area**—area restricted at certain times, in certain areas, and/or to certain vehicular use. These restrictions may be of any type, but can generally be accommodated within the following type of categories: numbers of vehicles; types of vehicles; time or season of vehicle use; permitted or licensed use only; use on existing roads and trails; use on designated roads and trails; and other restrictions.

**OHV Open Area**—area where all types of vehicle use is permitted at all times, anywhere in the area subject to the operating regulations and vehicle standards set forth in 43 CFR subparts 8341 and 8342.

**Old Growth**—old forest often containing several canopy layers, variety in tree sizes and species, decadent old trees, and standing and down dead woody material (PNW GTR-328, 1994).

**Old Growth Forest**—a mature forest stand that contains many large, mature trees scattered in clumps or patches, or spread randomly throughout the stand in varying sizes, ages, and stocking levels. The stand may also contain large woody debris of varying decomposition levels; have tree fall gaps of varying sizes and ages; and have snags of varying numbers, sizes, and ages of decomposition. High density understory trees or brush with multiple canopy layers of varying sizes and densities may be absent or may be present in randomly spaced clumps or patches. Typical low site ponderosa pine stands in the planning area may contain 10 to 13 large trees per acre greater than 21 inches dbh and 150 years in age, as well as 2 to 3 trees per acre greater than 31 inches dbh and 200 years in age. Typical mixed conifer stands in the planning area may contain 8 to 10 or more large trees per acre greater than 21 inches dbh and 150 years in age (USDA FS Region 6, Interim Old Growth Definition, June 1993).

**Old Growth Juniper**—old growth juniper typically exhibit the following characteristics: flattened, rounded, or uneven top; dead branches, bark missing; covered by a light green lichen; thick, fibrous bark with well developed furrows; large branches near the base; and leader growth in the upper quarter of the tree usually > 1 inch. Growth form and morphological characteristics vary across trees and stands so usually several characteristics are required to separate young and old trees (SageSTEP – treatment evaluation project, p. 12).



**Phase I, II, and III Juniper Stands**—These phases have the following characteristics:

Characteristics (post-settlement stands)	Phase I (early)	Phase II (mid)	Phase III (late)
Tree canopy (% of max. potential)	Open, actively expanding <10%	Actively expanding 10 to 30%	Expansion nearly stabilized >30%
Leader growth (dominant trees) (cm/yr)	terminal >10 lateral >10	terminal >10 lateral 5 to >10	terminal >10 lateral <5
Crown lift (mortality of lower limbs of dominant trees)	Absent	Absent	Lower limbs dying or dead where tree canopy >40%
Potential berry production	Low	Moderate to high	Low to near absent
Tree recruitment	Active	Active	Limited
Leader growth (understory trees) (cm/yr)	terminal >10 lateral >8	terminal 5 to >10 lateral 2 to >8	terminal <5 lateral <2
Shrub layer	Intact	Nearly intact to significant thinning	>75% dead

Source: Oregon State University, Technical Bulletin 152, Biology, Ecology, and Management of Western Juniper, June 2005.

**Old Growth Tree (Forested species) or (non-juniper)**—refers to mature tree. The tree would have a flattened crown, show signs of decay, have deeply furrowed or plated bark, some protruding dead limbs, large thick live limbs in crown, and long trunk free of live lower branches.

**Open Area**—Under 43 CFR 8340, an open area means an area where all types of vehicle use is permitted at all times, anywhere in the area subject to the operating regulations and vehicle standards (CFR 8341 and 8342).

**Overstory**—upper canopy layer; the plants below comprise the understory.

**Passive Restoration**—restoration that does not require human expenditure of energy. For example, allowing trees to die and fall into a stream channels, or prohibiting cutting and removing a tree that would otherwise fall into a stream channel. Passive restoration involves adaptive management of grazing, recreation management, ground disturbance, logging, road construction, use of motorized vehicles, and other uses proposed along stream channels and in floodplains and lentic areas.

**Patch**—an area of vegetation with homogeneous composition and structure.

**Perennial Stream**—a stream that flows continuously during an average water year.

**Perlite**—a volcanic glass with an equivalent composition to that of rhyolite, but with a higher water content than obsidian.

**Permanent Conversion**—permanently converting agricultural land to perennial, preferably native, species that do not require irrigation after establishment. Vegetation may require temporary fencing for establishment. Match the vegetation prescriptions to the Biophysical Setting. Also use actions under ACS Objectives to conserve and restore, within existing site capability and natural disturbance regimes, diversity and productivity of native riparian and aquatic plant communities.

**Physical Function or Physical Processes**—expected actions that can be mathematically described by physics, including matter and energy.

**Planning Area**—area containing all BLM-administered lands that would be managed under the JDBRMP.

**Plant Association**—distinctive combination of trees, shrubs, grasses, and herbs occurring in a theoretical terminal or climax community or a series of communities (PNW GTR-328, 1994).



**Potential Natural Condition**—(in reference to streams and riparian areas) the highest ecological status a riparian-wetland area can attain given no political, social, or economical constraints.

**Potential Natural Vegetation**—an historical term originally defined by A.W. Kuchler as the stable vegetation community which could occupy a site under current climatic conditions without further influence by humans. Often used interchangeably with Potential Natural Community.

**Potential Plant Community**—one of several plant communities that may become established on an ecological site under the present environmental conditions, either with or without interference by humans.

**Preferred Alternative or Plan**—alternative plan that the agency has initially selected that best fulfills the agency's statutory mission and responsibilities and offers the most acceptable resolution of the planning issues and management concerns.

**Preparedness Levels**—dictated by burning conditions, fire activity, and especially resource availability. They are used to assure that firefighting resources are ready to respond to new incidents.

**Prescribed Fire**—introduction of fire to an area under regulated conditions for specific management purposes (usually vegetation manipulation).

**Prescribed Fire Plan**—a site-specific implementation plan written to address implementation issues (objectives, safety, practices, etc.) of applying prescribed fire as a management tool in areas where appropriate NEPA has been completed.

**Pressure Ridge**—a ridge formed during inflation of a basalt flow, often having one or more prominent tension cracks along the ridge axis.

**Primary Wildlife Emphasis**—designates that wildlife is one of the most important management considerations for an area. Areas allocated to primary emphasis are intended to benefit wildlife and retain high wildlife use by applying specific guidelines (see Chapter 2).

**Primitive Road**—a linear route managed for use by four-wheel drive or high clearance vehicles. These routes do not normally meet any BLM road design standards.

**Properly Functioning Condition (PFC)**—state of resiliency where physical processes are in place to allow a riparian-wetland area to hold together during natural disturbance events with a high degree of reliability (such as a 25-year flood). For lentic areas, PFC is the fundamental hydrological, chemical, and physical processes that occur in a wetland that are linked to the biological productivity of the wetland.

**Properly Functioning Condition Assessment**—a qualitative determination of condition. It includes a checklist of 17 hydrologic, vegetative, and erosional/depositional (soils) attributes and processes which indicate the condition of riparian and lentic areas.

**Proper Soil Functioning Condition**—capacity of the soil to function at a level to (1) sustain biological activity, diversity, and productivity; (2) regulate and partition water and solute flow; (3) filter, buffer, degrade, and detoxify potential pollutants; and (4) store and cycle nutrients. For any area, upland soil proper functioning condition is being met if 7 of the 10 "Soil/Site Stability" indicators from technical reference "1734-6—Interpreting Indicators of Rangeland Health" are achieving a less than moderate departure from reference condition.

**Public Land**—any land or interest in land owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management.

**Public Participation**—a process designed to inform and involve all people and organizations not otherwise involved in the planning effort through consultation, cooperation, or collaboration. Involvement includes



opportunities to comment on preliminary and draft published materials, general public information or comment meetings, and periodic receipt of update material.

**Pumice**—a frothy, lightweight form of volcanic glass formed from expanding gases in a rhyolite magma.

**Recreation and Public Purposes Act (R&PP Act)**—an act passed by Congress that allows state and local governments and nonprofit organizations to lease and eventually acquire title to public lands for recreational or community expansion and other public purposes. The act was passed in recognition of the strong public need for a nationwide system of parks and historic preservation areas along with lands for other public purposes such as schools, fire houses, law enforcement facilities, municipal facilities, landfills, hospitals, and fairgrounds.

**Recreation Management Zone (RMZ)**—smaller areas within SRMAs. Each RMZ within a SRMA has four defining characteristics: (1) serves a different recreation niche within the primary recreation market, (2) produces a different set of recreation opportunities and objectives to help facilitate recreationists obtaining different experiences and benefits, (3) has a distinct recreation setting character (e.g., river, mountain range, sand dune), and (4) requires a different set of management actions to meet the targeted primary recreation market demand. Also see *Special Recreation Management Area*.

**Recreational River**—a river or section of a river that is readily accessible by road or railroad and that may have some development along its shorelines. A classification made pursuant to the Wild and Scenic Rivers Act.

**Regional and Statewide Conservation Actions, Strategies, and Priorities**—identified primarily within Oregon-Washington Partners in Flight Conservation Plans (Altman 2000, Altman and Holmes 2000) and the Oregon Conservation Strategy (ODFW 2006).

**Rehabilitate (travel management)**—heavy maintenance or reconstruction needed to bring a road back to standard design condition.

**Research Natural Area (RNA)**—an area of significant scientific interest that is designated to protect its resource values for scientific research and study. Under current BLM policy, these areas must meet the relevance and importance criteria of ACECs and are designated as ACECs.

**Reserve Forage Allotment (RFA)**—allotments that are not allocated to one specific grazing operator, but temporary non-renewable use would be allowed to facilitate rangeland restoration and recovery on a landscape scale. Grazing use that would be available in an RFA could lessen economic and operational impacts to grazing lessees by offsetting the temporary forage loss that is inherent to resting all or a portion of an allotment from grazing. RFAs could be used for unplanned events such as wildland fire induced forage loss and may provide limited relief for regional events such as drought, flood, insect damage, or disease.

**Resilience**—(1) ability of a system to respond to disturbances. Resiliency is one of the properties that enables the system to persist in many different states or successional stages, and (2) in human communities, refers to the ability of a community to respond to externally induced changes such as larger economic forces.

**Resource Advisor**—individual primarily responsible for identifying and evaluating potential impacts and benefits of fire operations (wildland or prescribed fire) on natural and cultural resources. The resource advisor anticipates impacts on resources as suppression or prescribed fire operations evolve; communicates requirements for resource protection to the Incident Commander or Incident Management Team; ensures planned mitigation measures are carried out effectively; and provides input in the development of short- and long-term natural resource and cultural resource rehabilitation plans. The resource advisor is normally from the local unit and is someone who has knowledge of the local area where the fire is burning.

**Resource Area**—the “on-the-ground” management unit of the Bureau of Land Management comprised of BLM-administered land within a specific geographic area.



**Resource Area Profile (RAP)**—a component of the analysis of the management situations; a description of the current condition, amount, location, use, and demands of the natural resources in a planning area.

**Resource Management Plan (RMP)**—current generation of land use plans developed by the BLM under the Federal Land Policy and Management Act. It replaces the older generation Management Framework Plans. Provides long-term (up to 20 years) direction for the management of a particular area of land, usually corresponding to a BLM resource area and its resources.

**Restoration**—as used in this text, vegetative treatments used to modify an ecosystem and designed to return plant and animal communities toward a condition and level of functioning that existed prior to human disturbance or influence.

**Rhyolite**—a light-colored volcanic rock with a silicon dioxide composition greater than 68% by weight. It commonly exhibits flow banding and its temperature when erupting ranges from 700° to 850°C.

**Right-of-Way**—a grant that authorizes the use of public lands for specified purposes such as pipelines, roads, telephone lines, electric lines, and reservoirs.

**Riparian**—a form of wetland transition between permanently saturated wetlands and upland areas. These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water influence. Lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels are typical riparian areas. Excluded are such sites as ephemeral streams or washes that do not exhibit the presence of vegetation dependent upon free water in the soil.

**Riparian Management Area**—areas managed for the attainment of aquatic objectives. Minimum widths of RMAs include the flood-prone areas and extend the following distances from the flood-prone area:

- 300-foot slope distance on both sides of the flood-prone area for perennial and intermittent stream channels.
- 300-foot slope distance from edge of wetland vegetation for lentic areas.
- 25-foot slope distance on both sides of ephemeral draws where average annual precipitation is less than 14 inches.
- 50-foot slope distance on both sides of ephemeral draws where average annual precipitation is greater than 14 inches.

**River Corridors**—Wild and Scenic Rivers within the plan boundary and within 0.25 mile of the river segments of the Main Stem John Day River, North Fork John Day River, South Fork John Day River, and Middle Fork John Day River (Record of Decision John Day River Management Plan, February 2001, page 1).

**Road**—a linear route declared a road by the owner, managed for use by low-clearance vehicles having four or more wheels, and maintained for regular and continuous use.

**Rosgen Stream Types**—a stream classification system that groups streams by water surface slope, entrenchment, width/depth ratio, and sinuosity. For example, Rosgen A stream types are characterized by steep gradients (between 4 and 10%), with deeply incised channels. Rosgen B stream types are moderately steep (between 2 and 4%), with rapids and riffles common and scour pools irregularly spaced. Rosgen C stream types are lower gradient streams. Rosgen E stream types are low-gradient streams (<2%, but can reach 4%).

**Sacred Site**—any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site (Executive Order 13007, 1996:1).



**Salable Minerals**—high volume, low value mineral resources including common varieties of rock, clay, decorative stone, sand, gravel, and cinder.

**Satisfactory Cover**—a stand of coniferous trees 40 or more feet tall, with an average canopy closure equal to or more than 70%.

**Satisfactory Cover Stand**—stand of conifer trees meeting the satisfactory cover definition equal to or greater than nine acres.

**Savanna**—in this FEIS/RMP, non-forest (usually shrub-steppe) land where juniper occurs as widely scattered trees at less than 10% crown cover.

**Scenic Corridor**—an area of special aesthetic values, including scenic vistas, unusual geologic or vegetative features, or other natural elements.

**Scenic River**—a river or section of a river that is free of impoundments and whose shorelines are largely undeveloped but accessible in places by roads. A classification made pursuant to the Wild and Scenic Rivers Act.

**Scoping**—process of identifying the range of consideration, issues, management concerns, preliminary alternatives, and other components of an environmental impact statement or land-use planning document. It involves both internal and external or public involvement.

**Secondary Wildlife Emphasis**—a designation where wildlife is one of several resource management programs that are of focus in an area and typically receive a slightly lower, but still significant, level of management consideration. Areas allocated to a secondary emphasis are intended to support wildlife and maintain a moderate amount of use, as outlined in Chapter 2.

**Sensitive Species**—see *Bureau Sensitive Species*.

**Seral Stage**—the rated departure of a plant community from a described potential natural community (PNC) for a specific ecological site. *Early seral* stage is an existing plant community that is defined as 0-25% comparability to the defined PNC. *Mid-seral* stage is an existing plant community that has 26-50% comparability to the PNC. *Late seral* stage is 51-75% comparable to the PNC. PNC is an existing plant community with 76-100% comparability to the defined PNC.

**Shield Volcano**—a gentle-sloped volcano built primarily by successive low-viscosity basalt flows; has a shield-shaped profile.

**Silviculture**—practice of manipulating the establishment, composition, structure, growth, and rate of succession of forests to accomplish specific objectives.

**Site Condition**—the level of condition, or degree of function, used to express the current condition of a site in contrast to site potential.

**Site Management Plan**—addresses the management of an individual population or site, or a collection of sites with similar characteristics. The "site" or area to be managed is defined by the field unit personnel responsible for managing the particular population/individual site. Site management plans are typically developed for those species/habitats that require active management of the site in order to meet the desired goal for the species/habitat. The plans are usually very specific as to what management actions need to occur, where, and what the timeline is for each action.

**Site Potential**—a measure of resource availability based on interactions among soils, climate, hydrology, and vegetation. Site potential represents the highest ecological status an area can attain given no political, social, or economic constraints. It defines the capability of an area, its potential, and how it functions (ICBEMP, 2000).



**Snag**—a standing dead tree, usually larger than five feet tall and six inches in diameter at breast height. Snags are important as habitat for a variety of wildlife species and their prey.

**Special Recreation Management Areas (SRMAs)**—areas where BLM makes a commitment through management presence and/or facility design to ensure or allow for specific activity, experience, or benefit opportunities and/or outcomes. These areas require explicit recreation management to provide specific recreation opportunities and meet recreation objectives and require direct recreation funding and personnel to fulfill commitments made to provide specific recreation opportunities. Also see *Extensive Recreation Management Area* and *Recreation Management Zone*.

**Special Status Species**—a plant or animal species falling into any one of the following categories: species federally listed as threatened or endangered, species proposed for Federal listing as threatened or endangered, candidate species for Federal listing, State listed species, Bureau sensitive species (see separate definition for each).

**Species Diversity**—the number, different kinds of, and relative abundance of species present in a given area.

**Stand**—a contiguous group of similar plants. For forest use, a contiguous group of trees sufficiently uniform in age-class distribution, composition, and structure, and growing on a site of sufficiently uniform quality to be a distinguishable unit.

**State Listed Species**—any plant or animal species listed by the State of Oregon as threatened or endangered within the state under ORS 496.004, ORS 498.026, or ORS 564.040.

**Structure**—the physical organization and arrangement of vegetation; the size and arrangement (both vertical and horizontal) of vegetation.

**Subbasin Review**—an interagency, collaborative consideration of resources, resource management issues, and management recommendations for one or more subbasins or watershed drainages approximately 800,000 to 1,000,000 acres in size.

**Subsoiling**—a restoration action for decompacting soil areas that have been compacted from multiple passes of heavy ground-based mechanical equipment. Soil compaction under the right moisture conditions is fractured from below with minimal topsoil mixing.

**Succession**—gradual supplanting of one community of plants by another. The sequence of communities is called a sere or seral stage. A process of changes in structure and composition of plant and animal communities over time. Conditions of the prior plant community or successional stage create conditions that are favorable for establishment of the next stage. The different stages in succession are often referred to as seral stages.

**Sustainability**—(1) meeting the needs of the present without compromising the abilities of future generations to meet their needs; emphasizing and maintaining the underlying ecological processes that ensure long-term productivity of goods, services, and values without impairing productivity of the land; (2) in commodity production, refers to the yield of a natural resource that can be produced continually at a given intensity of management (ICBEMP, 2000).

**Sustained Yield**—maintenance of an annual or regular periodic output of a renewable resource from public land consistent with the principles of multiple use. Also, the yield that a forest can produce continuously at a given intensity of management. Sustained yield management implies continuous production so planned as to achieve, at the earliest practical time, a balance between increment and cutting.

**T factor**—soil loss tolerance in tons per acre. It is defined as the maximum amount of erosion at which the quality of a soil as a medium for plant growth can be maintained. This quality includes maintaining (1) the surface soil as a seedbed for plants, (2) the atmosphere-soil interface to allow the entry of air and water into the soil and still protect the underlying soil from wind and water erosion, and (3) the total soil volume as a reservoir for water and plant nutrients, which is preserved by minimizing soil loss.



**Take**—to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.

**Tephra**—a descriptive term for materials ejected from volcanoes including ash, pumice, cinders, and volcanic bombs.

**Terrestrial**—pertaining to the land.

**The Nature Conservancy (TNC)**—a private national organization dedicated to the preservation of biological diversity.

**Thermal Cover**—cover used by animals to protect them against the weather.

**Threatened Species**—any plant or animal species defined under the Endangered Species Act as likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Listings are published in the Federal Register.

**Timberland**—forestland capable of continuously producing 20 cubic feet or more per acre of industrial wood.

**Tolerance Interval**—the range of values that represent a specific proportion or percentage of some sample or population (such as a 30%, 50%, or 80% tolerance interval), at a given level of confidence such as 95% or 90% confidence.

**Trail**—a linear route managed for human-powered, stock, or off-highway vehicle forms of transportation or for historical or heritage values. Trails are not generally managed for use by four-wheel drive or high-clearance vehicles.

**Tuff**—a volcanic rock formed by the welding together of ash and rock fragments from an explosive volcanic eruption.

**Underburn**—a fire that consumes surface fuels but not the overstory canopy.

**Understory**—collectively, those plants that are beneath the overstory. See *Overstory*.

**Upland**—the portion of the landscape above the valley floor or stream.

**Vegetative Composition**—the plant species present in a plant community.

**Vent**—an opening at the Earth's surface through which volcanic materials are erupted.

**Viability**—in general, the ability of a population of a plant or animal species to persist for some specified time into the future. For planning purposes, a viable population is one that has the estimated numbers and distribution of reproductive individuals to ensure that its continued existence will be well distributed in the planning area (ICBEMP, 2000).

**Visual Resources**—aesthetic qualities of the landscape. This is determined by assessing the scenic quality of a site, the sensitivity of people to changes in the landscape, and the visibility of the landscape from major viewing routes and key observation points.

**Watershed**—the region draining into a river, river system, or body of water. A fifth-field hydrologic unit code of the U.S. Geologic Survey (USGS) comprising 50,000 to 100,000 acres.

**Weed**—a plant considered undesirable, unattractive, or troublesome, usually introduced and growing without intentional cultivation. See also *Noxious Weed*.

**Wilderness**—an area that is essentially natural in character that has been designated by Congressional action in order to preserve that naturalness.



**Wilderness Characteristics**—these attributes include the area's size, its apparent naturalness, and outstanding opportunities for solitude or a primitive and unconfined type of recreation. It may also include supplemental values.

**Wilderness Study Area (WSA)**—public land under the jurisdiction of the Bureau of Land Management that was studied for wilderness character prior to 2003; currently in an interim management status awaiting wilderness designation or release from WSA status by Congress.

**Wildfire**—an unplanned ignition caused by lightning, volcanoes, and unauthorized and accidental human-caused actions and escaped prescribed fires.

**Wildland Fire**—a general term describing any non-structure fire that occurs in the vegetation and/or natural fuels.

**Wildland Fire Decision Support System (WFDSS)**—a decision-making process that evaluates alternative management strategies against selected safety, environmental, social, economical, political, and resource management objectives as selection criteria.

**Wildland Urban Interface (WUI)**—the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

**Wildland Urban Interface Zones**—areas where inhabited lands are intermeshed with or adjacent to wildlands. These zones are currently mapped based on federal and state policies and are subject to change. Under the Healthy Forest Restoration Act (2003), communities are also given the flexibility to define their own WUI through the development of a Community Wildfire Protection Plan (CWPPs). CWPPs are intended to be collaborative efforts to address the core elements of community protection, provide communities with an opportunity to influence where and how federal agencies implement fuel reduction projects on federal lands, and to assist both local communities and federal partners in matching treatment priorities across jurisdictional boundaries so that treatments are more effective at controlling the spread of unwanted fires. Current WUI designations are based on existing or in-progress CWPPs and Oregon Department of Forestry WUI mapping.

**Wildlife Food and Cover Plots**—cultivated plants specifically designed to provide food and/or cover for wildlife, especially upland and non-game birds. Plant species (such as alfalfa, wheat, sunflower, sorghum, milo, and millet) are commonly used for food and cover plots. These plots may require irrigation, but would not be monocultures of vegetation.

**Wild River**—a river or section of a river that is free of impoundments and generally inaccessible except by trail, with watersheds and shorelines essentially primitive and waters unpolluted. A classification made pursuant to the Wild and Scenic Rivers Act.

**Woodland**—a plant community in which, in contrast to a typical forest, the trees are often small or short-boled relative to their crown width or height. Collectively, the trees form an open canopy with the intervening area occupied by lower vegetation, commonly grass or shrub.

**Xeric**—pertaining to sites or habitats characterized by decidedly dry conditions.



**Zones**—BLM-administered lands are classified into four categories that establish guidance about their suitability for long-term ownership as follows:

- Zone 1—lands with national or statewide significance (for wildlife, recreation, scenic, or other values). Zone 1 lands are identified for retention in public ownership and are areas where management emphasis is being placed on increasing public land holdings through donations, exchange, or sale.
- Zone 2—lands with high resource values. Zone 2 lands are identified for retention or possible exchange for lands with higher resource values or transfer through the Recreation and Public Purposes Act.
- Zone 3—lands that generally do not provide substantial resource, public, or tribal benefits; that may not be cost effective for BLM to manage; or that would represent a greater public benefit in other ownership. Zone 3 lands are potentially suitable for transfer, sale, or other disposal, including lands identified as having potential land use benefits for local community expansion.
- Community Expansion (CE)—lands retained in public ownership until needed for specific community purposes.







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# Index

## A

- Area of Critical Environmental Concern (ACEC) 30, 31, 77, 96–101, 166–169, 173, 177, 178, 183–185, 188, 189, 196, 198, 202, 211, 215, 289, 295, 343, 388, 395, 399, 400, 454, 468, 472, 474, 475, 477
- Acquired lands 13, 14, 17, 190, 199, 203, 204, 206, 208
- Adaptive management 21, 62, 116, 379
- Agricultural land 36, 67, 191, 192, 199, 246, 313, 356, 410, 425
- Air quality 15, 41, 193, 203, 206, 208, 247, 369, 371, 380, 384–387, 389, 405, 407, 412, 472, 481
- Allotment 17, 23, 24, 66, 104, 105, 108, 109, 197, 200–204, 206, 208, 212, 217, 218, 270, 326, 375, 382, 394, 425, 456, 458, 459, 479, 480, 482, 511, 513
- Alternative outcomes 210–214
- Appropriate management level (AML) 79, 399, 400
- Appropriate response zone 28
- Aquatic conservation strategy 29, 56, 57, 65, 66, 67, 70, 73, 122, 166, 393, 414, 436, 468, 469, 471, 472, 502
- Aquatic resources 221

## B

- Back Country Byway(s) 31, 88, 101, 102, 196, 203, 206, 208, 213, 297, 329, 331, 437, 447, 465
- Bald eagle 281, 282, 283, 286, 289
- Benefits-Based Recreation Setting 112
- Best Management Practices (BMPs) 8, 15, 21, 22, 40, 45, 49, 56, 57, 58, 62, 63, 68, 84, 93, 116, 124, 166–170, 173–177, 182, 183, 185, 216, 218, 221, 370–373, 375, 379, 385, 391, 393, 394, 397, 398, 404, 412–417, 419, 421, 423, 425–427, 436, 452, 454, 456, 458, 471, 501, 502, 504, 511, 514, 517, 518, 520
- Biomass 13, 44, 48, 62, 68, 381, 313, 323, 327–329
- Boating 89, 111, 296, 297, 315, 317, 321, 323, 331, 331, 354

## C

- Candidate species 108, 363
- Canyon City 11, 111, 112, 266, 294, 295, 300, 301, 303, 304, 306, 342, 342
- Carbon storage 167, 232, 358, 359
- Cave 17, 75, 77, 83, 122, 195, 203, 206, 208, 289, 292, 293, 371, 385, 406, 412, 427–429, 434, 463
- Code of Federal Regulations (CFR) 3, 5–7, 11, 17, 83, 104, 108, 124, 165, 203, 283, 291, 299, 312, 326, 364
- Clarno 10, 89, 92, 100, 110, 118, 121, 181, 235, 237, 239, 240, 241, 244, 245, 252, 261, 266, 291, 295, 299, 301, 304, 330, 331, 333, 335, 339, 341, 342, 346, 347
- Climate 10, 22, 72, 232, 235–242, 244, 248, 358, 364, 365
- Condon 233, 236, 245, 266, 305–307, 330, 354
- Consultation 9, 42, 56, 71, 76, 216, 287, 423, 475, 494
- Cooperators 22, 116, 301
- Cultural resources 299, 302



Cumulative effects 22, 58, 363, 365, 374, 379, 380, 383, 401, 409, 423–426, 457, 477, 479, 497, 505, 506, 511, 517, 520

## **D**

Dayville 10, 102, 184, 238, 252, 266, 272, 288, 295, 297, 299, 306, 307, 319, 320, 329

Disposal 17, 35, 164, 179, 191, 192, 198, 218, 322, 385, 409, 453, 467, 504, 513, 518, 520–523, 531

Down wood 40, 43–45, 48, 68, 77, 78, 397, 427, 434

## **E**

Employment 27, 236, 305, 307, 308, 312, 314, 316, 318, 335, 523–526, 528, 539

Endangered Species Act (ESA) 5, 41, 42, 59, 67, 70, 76, 201, 218, 225, 277, 283, 363, 421, 423

Energy 8, 13, 15, 17, 31, 35, 51, 63, 65, 69, 82, 96, 101, 164, 167, 170, 176, 179, 182–185, 188, 224, 226, 248, 261, 270, 276, 316–318, 323, 328, 329, 341, 346, 347, 354, 358, 364, 370, 382, 383, 385, 390, 396, 397, 411, 412, 418, 427, 445, 448–450, 453, 454, 465–467, 469, 472, 474, 482, 486, 490, 503, 513, 518, 519

EPA 18, 235, 247, 358, 359

Extensive Recreation Management Area (ERMA) 33, 111, 118, 119, 123, 124, 197, 487, 506, 508, 510, 515, 533

## **F**

Federal Land Policy and Management Act (FLPMA) 3, 4, 5, 7, 13, 179, 215, 217, 218, 475

Fire 12, 13, 28, 43, 44, 49, 51–54, 78, 194, 203, 206, 208, 210, 226, 255, 259, 262–264, 266, 267, 287, 322, 378, 379, 385–387, 389, 393, 395, 400, 405, 406

Fire Regime Condition Class 12, 28, 43, 51–53, 262–264, 387

Fire return interval 253, 258

Fire suppression 28, 54, 55, 122, 238, 248, 255, 259, 261, 293, 405, 406, 424, 464

Firewood 48, 252, 327–329, 336

Fisheries 56, 277, 468, 471, 511, 543, 545, 549

Fishing 10, 11, 67, 122, 191, 280, 294, 296, 297, 302, 303, 305, 315, 317, 321, 323, 329, 332–335

Forest products 45, 48, 68, 82, 308, 314, 325, 327, 366, 388, 392, 398, 516, 523, 524, 526–528, 530, 531, 535

Fossil 11, 12, 100–103, 264, 266, 299, 304, 306, 330, 331, 332, 346, 354

Fuels 12, 13, 28, 43, 49, 50, 51, 54, 62, 71, 82, 195, 220, 221, 224, 255, 258, 264, 267, 325, 366, 373, 375, 379, 380, 384–389, 391, 394, 395, 399, 400, 401, 405, 406, 407, 409, 416, 423, 424, 427, 432, 433, 435, 456, 457, 459, 464, 467, 476, 478, 479

## **G**

Gilliam 10, 164, 171, 190, 246, 266, 302, 305–308, 310–314, 316, 318, 319, 324, 337, 338, 355, 539

Grant 10, 11, 170, 182, 183, 246, 266, 302, 304–308, 310–314, 316–320, 324, 328, 337, 338, 339, 342, 343, 346, 347, 356, 539

Grazing 11, 13, 15, 17, 21, 22, 24, 26, 32, 40, 48, 50, 51, 55, 57, 68, 69, 72, 74, 77, 96, 98, 100, 101, 104, 105, 108, 109, 124, 125, 183, 190, 192, 195, 197, 200–204, 206, 208, 210, 217, 218, 227, 237, 238, 241–243, 245, 248, 253, 254, 261, 268, 270, 287, 289, 293, 296, 300, 304, 312, 320, 321, 325, 326, 327, 340, 356, 358, 366, 367, 370, 371, 375, 378, 380–383, 389, 394, 395, 398–403, 405, 410, 414–416, 418, 422, 425, 427, 430, 436, 437, 456, 458, 469, 472–482, 535, 536

Grazing decision tree 17, 24, 422

Grazing matrix 17, 24, 26, 480, 482, 526, 529, 536, 537

Greenhouse gas 232, 248



**H**

Hazardous materials management 193, 199, 203, 206, 208, 369, 522

Herbicides 62, 71, 98, 389, 423, 436, 457

Herd management area (HMA) 16, 79, 290, 399, 400, 458, 459

Hunting 24, 25, 29, 67, 74, 111, 120, 191, 197, 238, 287, 288, 294, 296–298, 302–305, 315, 317, 320–323, 327, 329, 330, 332–336, 340, 341

**I**

ID Team 22, 48, 49, 57–59, 62, 63, 68–71, 88, 166, 168, 169, 215–218, 364, 393

IMP 93, 96, 97, 101, 171, 178, 472–474

Invasive plants 402–404

**J**

Jefferson County 10, 111, 164, 171, 190, 246, 302, 307, 308, 324, 337, 338, 342, 343, 539

Juniper treatment 409

**K**

Key habitat 223, 279, 443, 444

Kimberly 109, 117–119, 165, 197, 240, 260, 266, 272, 281, 330, 335, 354

**L**

Lands and Realty 17, 35, 72, 116, 179–185, 191, 198, 203, 206, 208, 354–358, 363, 369, 371, 385, 387, 389, 405, 406, 412, 425, 453, 457, 459, 462, 463, 467, 473, 481, 504, 513, 521, 522

Land tenure 23, 25, 35, 182, 183, 186–189, 409, 452, 462, 466, 473

Leasable minerals 3, 6, 12, 17, 18, 21, 22, 23, 26, 27, 35, 37, 101, 121–123, 164, 166–168, 190, 191, 197, 203, 210, 215–218, 222–224, 226–228, 331–365, 367–375, 378–387, 389–407, 409–419, 421–423, 425–427, 429–439, 441, 443–445, 447, 448, 451–459, 463–470, 472–481, 483, 484, 486–488, 491–493, 495, 497, 502–504, 507, 509–511, 513–517, 519–540, 543

Little Canyon Mountain (LCM) 10, 24, 25, 26, 33, 34, 111, 112, 116–119, 204, 207, 209, 217, 228, 291, 327, 334, 339, 342, 356, 365, 372, 373, 386, 396, 403, 404, 421, 422, 449, 451, 466, 467, 484, 486, 487, 489, 491, 492, 494–500, 504–506, 534, 535

Livestock production 483

Locatable minerals 17, 35, 83, 165, 168, 466, 341, 342, 519

**M**

Minerals (See leasable, locatable, or salable minerals)

Mining 11, 35, 45, 57, 64, 65, 67, 71, 78, 83, 111, 122, 125, 164–169, 176, 177, 179, 185, 189, 196, 224, 242, 245, 248, 268, 291, 292, 295–300, 304, 307, 311, 316, 321, 334, 338, 340–343, 346, 355, 356

Mitchell 24, 102, 112, 116, 209, 217, 238, 241, 261, 266, 291, 295, 304, 306, 307, 339, 347

Mitigation 16, 24, 40, 42, 63, 70, 76, 78, 117, 168, 174, 176, 190, 367, 385, 465, 466, 484, 485, 498, 503, 513, 517, 520

Monitoring 6, 22, 48, 54, 56, 57, 58, 62, 74, 79, 92, 96, 98, 100, 108, 114, 117, 122, 167–169, 175, 185, 189, 260, 296, 326, 331, 372, 379, 398, 399, 413–415, 455, 472, 473, 480, 496, 500

Monument 10, 16, 100–103, 109, 110, 197, 233, 238, 240, 264, 266, 277, 295, 297, 299, 305–307, 320, 329, 330, 331, 340, 347



Morrow County 3, 10, 26, 246, 302, 305–308, 317, 324, 337, 338, 539

## N

Native American 102, 103, 196, 203, 206, 208, 323, 325, 328, 371, 385, 406, 412, 427, 459, 473, 475, 481

North Fork John Day Acquisition Lands 282

No Surface Occupancy (NSO) 31, 70, 82, 96, 101, 164, 166, 170–174, 176–178, 184, 188–190, 213, 214, 224, 226, 379, 461, 469, 523

Noxious weeds (*See also* Invasive plants) 13, 15, 16, 44, 48, 101, 224, 226, 253, 254, 261, 264, 295, 320, 364, 365, 389, 396, 399, 402, 404.

## O

ODFW 12, 55, 56, 67, 72, 73, 75, 76, 89, 92, 114, 116, 195, 198, 225, 279–282, 286–288, 298, 332, 339

Off-Highway Vehicle (OHV) 12, 13, 23, 24, 26, 31, 33, 40, 82, 96–98, 100, 101, 116–119, 124, 128, 129, 131–163, 184, 197, 204, 207, 209, 212, 216, 217, 219, 223–225, 228, 294–296, 317, 320–322, 325, 329, 333–335, 338, 340, 363, 365, 366, 368, 370, 372–374, 379, 384, 386, 387, 396, 398, 399, 401–403, 405, 409, 410, 416, 419, 421–423, 428, 437, 438, 448–452, 455, 456, 458, 459, 462, 465–467, 470–473, 476–479, 482–486, 488–512, 515, 516, 533, 534, 536

Old growth 167–169, 185, 189, 254, 255, 259

Outstandingly Remarkable Values (ORV) 16, 29, 30, 55, 56, 88, 93, 104, 172, 196, 203, 206, 225, 296, 369, 448, 469–471

## P

PACFISH 8, 29, 172, 194, 195, 198, 225, 393, 410, 414, 416–419, 422, 469, 471, 516

Paleontological resources 102, 196, 203, 206, 208, 371, 385, 406, 412, 473, 475, 476, 481, 511, 522

Paleontology 16, 30, 31, 96, 97, 100, 101, 167, 168, 169, 185, 189, 233, 296, 298, 330, 331, 400

PFC *See* Proper Functioning Condition

Prescribed burning 220, 267, 410

Prescribed fire 41, 43, 44, 48–51, 54, 65, 77, 85, 98, 100, 224, 247, 366, 379, 380, 388, 389, 391, 392, 395–398, 402, 404–407, 409, 410, 413, 423, 428, 430, 433, 434, 456, 457, 472, 473, 481, 482, 503, 538

Primitive and unconfined recreation 459

Priority Communities 427, 429, 439, 441, 443, 445, 449, 451

Proper Functioning Condition (PFC) 57–59, 63, 65–68, 74, 201, 202, 221, 269, 270, 410–416

Public health and safety 25, 120

Public involvement 12, 98, 533, 535–538, 540, 543, 547

## R

RAC 545–547

Recreation 3, 7, 11, 13, 15, 21, 27, 30, 33, 36, 40, 45, 50, 51, 58, 63, 65, 67, 69, 79, 83, 85, 88, 89, 92, 93, 96, 105, 109–111, 116, 120–124, 164–168, 170, 172, 173, 180, 184, 191, 192, 195–197, 202–204, 207, 208, 210, 215, 222, 225, 228, 241–243, 248, 261, 267, 268, 271, 273, 291, 292, 296, 297, 305, 310, 317, 318, 321, 322, 326, 327, 329–336, 355, 366, 367, 370–374, 380–383, 401, 410, 411, 423, 425–428, 438, 439, 452, 457–459, 465, 468–478, 483, 484, 486–494, 497–499, 500–505, 509, 510, 512, 515, 517, 523, 524, 526, 527, 534, 537

Recreation Management Zones 35, 40, 164, 166, 198, 346, 513

Recreation permits 35, 40, 164, 166, 198, 346, 513



- Recreation and Public Purposes (R&PP) 179, 182, 190, 217, 356, 179, 183, 198, 356, 504
- Rehabilitation 40, 55, 62, 89, 103, 104, 110, 125, 167–169, 175, 181, 185, 205, 227, 371–374, 379, 380, 402, 417, 455, 482, 503, 511, 513, 514
- Research Natural Area (RNA) 30, 31, 96, 97, 100, 101, 166, 168, 169, 177, 184, 188, 201, 202, 220, 388, 395, 396, 400, 407, 472, 474, 475
- Reserve Forage 23, 394, 437, 513, 524
- Resource Advisory Council 11, 22, 545, 546
- Right-of-way 4, 17, 40, 45, 57, 67, 68, 82, 83, 98, 99, 100, 122, 125, 166, 168, 169, 170–172, 178, 179, 182, 184, 185, 188, 189, 209, 210, 218, 261, 291, 292, 337, 346, 347, 354, 396, 397, 425, 451, 454, 457, 463, 466, 486, 504, 511–513, 519, 521–523
- Riparian management area (RMA) 66, 221, 419
- Riparian vegetation 57, 58, 62, 63, 65, 66, 68–70, 89, 104, 105, 172, 191, 252, 270, 276, 293, 387, 410–412
- River management 8, 16, 110, 197, 217, 294, 296, 468
- RNA *See* Research Natural Area.
- Road density 25, 96, 123, 124, 209, 216, 222, 223, 228, 283, 410, 422, 428, 438–444, 451, 501, 502, 505, 512, 515, 517
- Rockhounding 331
- ROW *See* right of way.
- R&PP *See* Recreation and Public Purposes.

## S

- Salable minerals 35, 40, 164, 166, 198, 346, 513
- Seasonal restrictions 74, 77, 78, 83, 122, 201, 202, 409, 437, 439, 480, 511, 523
- Sensitive Species 281
- Service Creek 10, 109, 120, 180, 260, 266, 272, 273, 277, 286, 296, 330, 331
- S&Gs *See* Standards & Guidelines.
- Sherman 10, 92, 110, 164, 171, 190, 246, 266, 301, 302, 305–308, 314, 316, 317, 319, 320, 324, 330, 337, 338, 539
- Sherman County 92, 110, 301, 305, 317, 320, 330
- Snags 44, 50, 77, 78, 392, 427, 434, 442, 443
- Social effects 6, 363, 484, 524
- Soils 22, 24, 28, 37, 40, 42, 44, 58, 59, 66–68, 84, 96, 113, 117, 167–169, 185, 189, 215, 217, 237, 242, 244–246, 248–254, 261, 302, 319, 320, 364, 370, 371, 537
- Source water 71, 366, 410, 426
- Special management areas 190, 197, 202, 366, 426
- Special Management Designations 85, 88, 89, 92, 93, 96–102, 196, 203, 206, 295–297
- Special Recreation Management Area (SRMA) 33, 109–119, 165, 167, 168, 170, 197, 209, 212, 228, 401, 449–451, 459, 465, 468, 470, 471, 474, 475, 487, 488, 497, 498, 506–510, 515, 533, 534
- Special recreation permits 33, 96, 110, 527, 533
- Special road designation 297
- Special status species 13, 41, 42, 56, 72–74, 76–78, 117, 260, 277, 283, 289, 371, 398, 399, 400, 401, 412, 427, 452, 455–457
- Spray 117, 241, 266, 281, 299, 306, 307, 317, 319, 330, 331



Spring Basin Wilderness 3, 22, 31, 85, 93, 95, 123, 124, 341, 397, 472, 501, 519, 527

SRMA *See* Special Recreation Management Area.

Standards and Guidelines 24, 32, 44, 108, 194, 195, 200, 218, 300, 375

Summary of Key Effects 219

## **T**

Thinning 12, 40, 43, 45, 49-51, 63, 68, 193, 224, 255, 328, 366, 373, 390, 391, 397, 423, 433, 457, 459, 460, 464

Timber 190, 219, 259, 314, 328, 329, 339

TMDL 58, 62, 70, 426

Total Maximum Daily Loads 15

Tourism 238, 304, 315, 317, 323

Travel management 13, 18, 23, 25, 26, 34, 96, 121-125, 128-163, 185, 198, 204, 205, 207, 209, 215, 336-340, 365, 368, 383, 405, 409, 437, 438, 441-443, 451, 459, 462, 463, 472, 482, 483, 500, 511-517, 537

Twickenham 92, 121, 266, 330, 339

## **U**

Umatilla 3, 8, 10, 26, 55, 109, 190, 235-237, 244, 245, 247, 287, 296, 302-304, 307, 308, 315, 323-325, 334, 337, 338, 340, 539

Umatilla County 236, 247

USFS 96, 122, 226, 294-296, 327, 329, 332, 335, 339, 355

USFWS 8, 66, 67, 76, 216, 283, 287

## **V**

Vegetation 15, 16, 23, 28, 37, 40-49, 51, 62, 65-68, 72-74, 77, 78, 112, 116, 190-193, 203, 206, 208, 222, 224, 237, 241, 242, 248-257, 259-264, 266, 272, 279, 286, 293, 327, 366, 368, 375, 385, 387-395

Vegetative products 327, 328

Visual Resource Management (VRM) 16, 24, 29, 30, 31, 82, 83-87, 96, 195, 196, 211, 224-226, 294, 388, 395, 396, 409, 428, 459, 460, 461, 463-472, 474, 475, 505, 511, 514, 515

Visual resources 16, 24, 30, 84, 96, 195, 203, 206, 208, 293, 294, 369, 385, 405, 459, 461, 463-467, 473, 481, 483

VRM *See* Visual Resource Management.

## **W**

Wasco 10, 164, 171, 190, 246, 247, 266, 302, 304, 306, 307, 308, 316, 324, 337, 338, 539

Wasco County 246, 247

Water quality 56, 58, 62, 271, 272

Water quantity 277

Water rights 29, 36, 55, 56, 58, 66, 67, 191, 192, 199, 322, 356

Wheeler 10, 11, 102, 111, 164, 171, 190, 241, 246, 266, 302, 304-308, 310-314, 316-320, 323, 324, 328, 330, 337, 338, 343, 539

Wheeler County 11, 102, 241, 304-306, 308, 312-314, 316-318, 320, 323, 330, 343

Wild and Scenic River (WSR) 7, 8, 13, 16, 24, 25, 30, 33, 35, 36, 51, 55, 56, 84, 85, 88, 93, 102, 105, 109-111, 120, 124, 166, 173, 179, 182, 191, 192, 196, 197, 199, 201-203, 206, 211, 215, 225, 261, 294, 296, 297, 321, 322, 333, 356, 395, 396,



- 412, 417, 428, 465, 468–472, 487, 488, 501
- Wilderness 7, 13, 16, 17, 22, 23, 25, 29, 31, 41, 79, 82, 83, 88, 93, 96, 98–101, 117, 124, 164, 166, 168, 169, 178, 184, 188, 216, 224, 226, 232, 291, 292, 295, 296, 320, 321
- Wilderness characteristics 16, 17, 25, 26, 29, 79–82, 195, 203, 206, 208, 216, 224, 291, 292, 369, 382, 395, 396, 400, 404, 459, 460–462
- Wilderness Study Area (WSA) 7, 16, 17, 23, 24, 30, 31, 41, 45, 48, 51, 79, 84, 85, 93, 96–103, 109, 111, 112, 116, 118, 124, 164–166, 168, 169, 171, 178, 182–184, 188, 195–197, 201, 202, 208, 211, 213, 216, 224, 226, 266, 267, 291, 292, 294–296, 321, 333, 369, 372, 392, 395, 396, 400, 407, 422, 438, 439, 472–475
- Wildfire 28, 49, 50, 51, 54, 238, 245, 247, 248, 259, 286, 289, 295, 363, 379, 381, 382, 385–387, 391, 406, 409, 413, 424, 431–465
- Wild horse 16, 79, 195, 203, 206, 208, 291, 292, 369, 385, 398, 406, 458, 472, 481, 509, 511, 546
- Wild horse and burro 546
- Wildland Urban Interface (WUI) 28, 44, 45, 49, 50, 51, 54, 55, 210, 264, 266, 267, 328, 385, 389, 392–394, 405, 406, 435
- Wildlife 3, 7, 12, 13, 15, 28, 29, 36, 43–45, 48, 50, 51, 54, 57, 59, 67, 71–74, 76–78, 82, 88, 97, 99, 101, 102, 117, 120–124, 167–169, 172, 178, 183, 185, 188, 189, 191–193, 195, 197, 199, 203, 215, 222, 223, 228, 237, 238, 242, 243, 245, 246, 248, 252, 261, 268, 271, 281, 282, 286, 289, 292, 296, 297, 315, 316, 320, 321, 326, 329, 331, 333, 335, 339, 356, 364, 369, 370, 375, 378, 380, 397, 402, 410–412, 415, 416, 422, 427–455, 537
- Wildlife Management Area 182, 183, 298
- Wind 185, 244, 292, 316, 323, 358, 467
- Withdrawal 21, 67, 165–167, 170, 171, 179, 183, 184, 188, 190, 192, 216, 321, 354, 355, 358
- WSA *See* Wilderness Study Area
- WSR *See* Wild and Scenic River
- WUI *See* Wildland Urban Interface











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